NASA-TM-109233

NASA

PROJECT OPERATIONS BRANCH, CODE 513
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND, U.S.A. 20771

SATELLITE SITUATION REPORT

VOLUME 32, NUMBER 1 MARCH 31, 1992

SATELLITE SITUATION REPORT
VOLUME 32 NO. 1
A/O 2400Z ON MARCH 31, 1992

THIS REPORT CONSISTS OF DATA COMPUTED AT GODDARD SPACE FLIGHT CENTER, NORAD, OR PROVIDED BY SATELLITE OWNERS. THE REPORT IS PUBLISHED AND DISTRIBUTED BY:

PROJECT OPERATIONS BRANCH CODE 513
NASA/GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND, U.S.A. 20771

SPACE OBJECTS BOX SCORE

	OBJECTS IN ORBIT			DECAYED OBJECTS		
	PAYLOAD	DEBRIS	TOTAL	PAYLOAD	DEBRIS	TOTAL
ARGENTINA	1	0	1	0	0	0
AUSTRALIA	4	0	4	1	0	1
BRAZIL	3	0	3	0	0	0
CANADA	16	0	16	0	0	0
CZECH	1	0	1	1	0	1
ESA	23	134	157	3	440	443
ESRO	0	0	0	7	3	10
FRANCE	17	15	32	7	59	66
FRANCE/FRG	2	0	2	0	0	0
FRG	11	1	12	4	5	9
INDIA	7	1	8	6	7	13
INDONESIA	5	0	5	1	1	2
INTERNATIONAL TELECOM-MUNICATIONS SATELLITE ORGANIZATION (ITSO)	42	0	42	1	0	1
ISRAEL	0	0	0	2	2	4
ITALY	2	0	2	5	0	5
JAPAN	46	50	96	9	66	75
LUXEMBOURG	2	0	2	0	0	0
MEXICO	2	0	2	0	0	0
NATO	7	2	9	0	0	0
NETHERLANDS	0	0	0	1	3	4
PAKISTAN	0	0	0	1	0	1
PRC	10	81	91	21	57	78
SAUDI ARABIA	3	0	3	0	0	0
SPAIN	1	0	1	0	0	0
SWEDEN	2	0	2	0	0	0
UK	17	2	19	8	3	11
US	593	2605	3198	619	2798	3417
USSR	1211	2083	3294	1542	9251	10793
COLUMN	2028	4974	7002	2239	12695	14934
SUM TOTAL						21936

OBJECTS IN ORBIT

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1958 LAUNCHES										
BETA 1		16	US	17 MAR	137.7	34.3	4255	657		
BETA 2	VANGUARD 1	5	US	17 MAR	133.2	34.2	3868	656		
BETA 3		1576	US	17 MAR	126.9	34.2	3323	653		
1959 LAUNCHES										
ALPHA 1	VANGUARD 2	11	US	17 FEB	122.9	32.9	3058	557		
ALPHA 2		12	US	17 FEB	127.2	32.9	3440	558		
ETA 1	VANGUARD 3	20	US	18 SEP	126.5	33.4	3426	512		
IOTA 1	EXPLORER 7	22	US	13 OCT	98.7	50.3	868	525		
MU 1	LUNA 1	112	USSR	2 JAN	HELIOCENTRIC ORBIT					
NU 1	PIONEER 4	113	US	3 MAR	HELIOCENTRIC ORBIT					
1960 LAUNCHES										
ALPHA 1	PIONEER 5	27	US	11 MAR	HELIOCENTRIC ORBIT					
BETA 2	TIROS 1	29	US	1 APR	98.3	48.4	698	658		
BETA 4		115	US	1 APR	98.5	48.2	722	648		
ETA 1	TRANSIT 2A	45	US	22 JUN	100.8	66.7	998	597		
ETA 2	GREB	46	US	22 JUN	100.2	66.7	946	590		
ETA 3		47	US	22 JUN	100.4	66.7	962	591		
ETA 4		840	US	22 JUN	98.1	66.6	777	556		
ETA 5		841	US	22 JUN	97.9	66.7	765	552		
IOTA 2		50	US	12 AUG	118.1	47.2	1684	1502		
IOTA 3		51	US	12 AUG	118.2	47.2	1686	1517		
IOTA 4		52	US	12 AUG	CURRENT ELEMENTS NOT MAINTAINED					
IOTA 5		53	US	12 AUG	118.4	47.3	1685	1530		
NU 1	COURIER 1B	58	US	4 OCT	107.1	28.3	1215	966		
NU 2		59	US	4 OCT	106.6	28.2	1207	927		
XI 1	EXPLORER 8	60	US	3 NOV	102.8	49.9	1387	396		
PI 1	TIROS 2	63	US	23 NOV	96.4	48.5	618	552		
PI 5		5922	US	23 NOV	105.2	47.0	1035	974		
1961 LAUNCHES										
APSI 5		19436	US	18 SEP	91.8	58.3	368	361		
GAMMA 1	VENERA 1	80	USSR	12 FEB	HELIOCENTRIC ORBIT					
DELTA 2		82	US	16 FEB	117.8	38.9	2532	635		
DELTA 3		85	US	16 FEB	108.9	38.8	1761	588		
DELTA 6		3927	US	16 FEB	109.9	38.9	1853	589		
DELTA 7		4026	US	16 FEB	110.3	38.9	1905	578		
NU 1	EXPLORER 11	107	US	27 APR	104.6	28.8	1475	479		
NU 2		3739	US	27 APR	90.6	28.8	334	273		
OMICRON 1	TRANSIT 4A	116	US	29 JUN	103.6	66.8	980	872		
OMICRON 2	INJUN-SR-3	117	US	29 JUN	103.7	66.8	985	876		
OMICRON 3 - 297			US	29 JUN	SEE NOTE 1*					1*
OMICRON 23		138	US	29 JUN	103.3	67.2	937	893		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1961 LAUNCHES (CONT.)										
OMICRON 39		154	US	29 JUN	102.9	66.7	965	824		
RHO 1	TIROS 3	162	US	12 JUL	100.0	47.9	792	723		
RHO 2		165	US	12 JUL	98.2	47.9	692	651		
RHO 3		166	US	12 JUL	90.3	47.9	294	282		
RHO 4		167	US	12 JUL	101.5	47.9	901	759		
SIGMA 1	MIDAS 3	163	US	12 JUL	161.4	91.2	3539	3344		
SIGMA 3		188	US	12 JUL	161.1	91.2	3538	3317		
SIGMA 4		196	US	12 JUL	161.8	91.2	3563	3353		
A DELTA 1	MIDAS 4	192	US	21 OCT	165.9	95.8	3761	3484		
A DELTA 3		194	US	21 OCT	165.5	95.8	3845	3367		
A DELTA 4		195	US	21 OCT	166.3	95.9	3869	3409		
A DELTA 5		2009	US	21 OCT	165.7	95.8	3732	3494		
A DELTA 6		2371	US	21 OCT	165.2	95.8	4796	2392		
A ETA 1	TRANSIT 4B	202	US	15 NOV	105.7	32.4	1105	953		
A ETA 2	TRAAC	205	US	15 NOV	105.8	32.4	1108	956		
A ETA 3		204	US	15 NOV	105.6	32.4	1097	950		
A ETA 4		10796	US	15 NOV	105.8	32.4	1107	955		
1962 LAUNCHES										
ALPHA 1	RANGER 3	221	US	26 JAN	HELIOCENTRIC ORBIT					
ALPHA 2		222	US	26 JAN	HELIOCENTRIC ORBIT					
BETA 1	TIROS 4	226	US	8 FEB	99.9	48.3	813	694		
BETA 2		227	US	8 FEB	100.6	48.2	890	683		
BETA 3		228	US	8 FEB	97.9	48.4	677	638		
BETA 4		229	US	8 FEB	97.5	48.3	670	611		
KAPPA 1		271	US	9 APR	152.9	86.7	3406	2782		
KAPPA 3		273	US	9 APR	152.5	86.7	3366	2790		
KAPPA 4		274	US	9 APR	153.3	86.7	3449	2766		
MU 2		282	US	23 APR	HELIOCENTRIC ORBIT					
A ALPHA 1	TIROS 5	309	US	19 JUN	99.5	58.1	892	573		
A ALPHA 2		311	US	19 JUN	90.7	58.0	313	299		
A ALPHA 3		312	US	19 JUN	100.1	58.3	952	574		
A ALPHA 4		313	US	19 JUN	90.1	58.0	291	269		
A EPSILON 1	TELSTAR 1	340	US	10 JUL	157.8	44.8	5640	948		
A EPSILON 2		341	US	10 JUL	157.6	44.8	5626	946		
A OMICRON 1		369	US	23 AUG	98.1	98.4	755	581		
A OMICRON 3		378	US	23 AUG	93.3	98.4	460	409		
A OMICRON 4		388	US	23 AUG	95.3	98.6	572	496		
A RHO 1	MARINER 2	374	US	27 AUG	HELIOCENTRIC ORBIT					
A RHO 2		375	US	27 AUG	HELIOCENTRIC ORBIT					
A PSI 1	TIROS 6	397	US	18 SEP	97.6	58.3	652	638		
A PSI 3		399	US	18 SEP	97.5	58.4	659	614		
B ALPHA 1	ALOUETTE 1	424	CANADA	29 SEP	105.2	80.5	1023	987		
B ALPHA 2		426	US	29 SEP	105.2	80.5	1019	991		
B ALPHA 3		510	US	29 SEP	105.2	80.5	1013	989		
B ALPHA 4		511	US	29 SEP	105.3	80.4	1031	982		
B ETA 1	RANGER 5	439	US	18 OCT	HELIOCENTRIC ORBIT					
B ETA 2		440	US	18 OCT	HELIOCENTRIC ORBIT					
B MU 1	ANNA 1B	446	US	31 OCT	107.9	50.2	1181	1076		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1962 LAUNCHES (CONT.)										
B MU 2		447	US	31 OCT	107.6	50.1	1164	1065		
B NU 3		450	USSR	1 NOV	HELIOCENTRIC ORBIT					
B UPSILON 1	RELAY 1	503	US	13 DEC	185.1	47.5	7432	1327		
B UPSILON 2		515	US	13 DEC	184.8	47.5	7415	1325		
B CHI 1	EXPLORER 16	506	US	16 DEC	104.1	52.0	1160	744		
1963 LAUNCHES										
1963 004A	SYNCOM 1	553	US	14 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1963 008B	LUNA 4	566	USSR	2 APR	BARYCENTRIC ORBIT					
1963 013A	TELSTAR 2	573	US	7 MAY	225.3	42.7	10811	963		
1963 013B		575	US	7 MAY	225.0	42.7	10796	956		
1963 014A		574	US	9 MAY	166.4	87.3	3680	3603		
1963 014B	ERS 5	579	US	9 MAY	165.0	87.3	4926	2249		
1963 014C	ERS 6	608	US	9 MAY	166.4	87.3	3725	3557		
1963 014D - 014FH			US	9 MAY	SEE NOTE 2*					2*
1963 022B		603	US	16 JUN	96.2	89.8	583	568		
1963 024A	TIROS 7	604	US	19 JUN	93.4	58.2	445	434		
1963 025B		614	US	27 JUN	115.1	82.1	2598	324		
1963 030A	ERS 10	622	US	18 JUL	167.8	88.4	3723	3674		
1963 030B	ERS 9	635	US	18 JUL	167.8	88.4	3726	3671		
1963 030C		630	US	18 JUL	167.4	88.4	3747	3621		
1963 030E		631	US	18 JUL	168.2	88.4	3789	3642		
1963 030F		3121	US	18 JUL	167.8	88.5	3727	3670		
1963 030G		3132	US	18 JUL	167.8	88.5	3758	3641		
1963 030H		20153	US	18 JUL	162.1	88.7	5768	1168		
1963 031A	SYNCOM 2	634	US	26 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1963 038A		669	US	28 SEP	107.0	89.9	1105	1066		
1963 038B		670	US	28 SEP	107.1	90.0	1126	1063		
1963 038C	SN 39	671	US	28 SEP	107.1	90.0	1124	1062		
1963 038D		672	US	28 SEP	106.2	89.9	1076	1024		
1963 038E		745	US	28 SEP	106.6	89.9	1083	1051		
1963 038F		2097	US	28 SEP	106.3	89.9	1083	1025		
1963 038G		3166	US	28 SEP	107.1	90.0	1125	1062		
1963 038K		12943	US	28 SEP	104.6	89.9	1076	876		
1963 038K		20470	US	28 SEP	106.1	89.9	1061	1027		
1963 039A		674	US	17 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1963 039C		692	US	17 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1963 047A	CENTAUR 2	694	US	27 NOV	104.7	30.4	1492	470		
1963 047B - 047U			US	27 NOV	SEE NOTE 3*					3*
1963 049A		703	US	5 DEC	106.7	90.1	1084	1059		
1963 049B		704	US	5 DEC	106.9	90.1	1111	1057		
1963 049C		705	US	5 DEC	106.9	90.1	1109	1056		
1963 049D		706	US	5 DEC	106.5	90.1	1089	1040		
1963 049E		715	US	5 DEC	105.8	90.1	1049	1015		
1963 049F		753	US	5 DEC	106.6	90.1	1096	1041		
1963 049G		2432	US	5 DEC	106.9	90.1	1109	1054		
1963 049H		2620	US	5 DEC	106.3	90.1	1062	1044		
1963 053B		721	US	19 DEC	115.2	78.6	2330	598		
1963 053C		722	US	19 DEC	110.3	78.6	1846	638		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1963 LAUNCHES (CONT.)										
1963 053E		724	US	19 DEC	108.7	78.6	1737	595		
1963 053G		726	US	19 DEC	106.0	78.6	1492	590		
1963 053H		732	US	19 DEC	110.0	78.6	1827	623		
1963 053J		3750	US	19 DEC	108.1	78.6	1658	615		
1963 053K		17665	US	19 DEC	110.8	78.7	1883	644		
1963 054A	TIROS 8	716	US	21 DEC	98.5	58.5	712	664		
1963 054C		720	US	21 DEC	100.1	58.5	856	671		
1963 054E		19396	US	21 DEC	98.1	58.5	700	636		
1964 LAUNCHES										
1964 001A		727	US	11 JAN	103.3	69.9	924	900		
1964 001B	GRAVITY GRADIENT 1	728	US	11 JAN	103.2	69.9	920	896		
1964 001C	SECOR (EGRS) 1	729	US	11 JAN	103.3	69.9	925	900		
1964 001D	SOLRAD 7A	730	US	11 JAN	103.2	69.9	923	899		
1964 001E	GREB	731	US	11 JAN	103.2	69.9	923	899		
1964 002A		733	US	19 JAN	100.8	99.1	819	769		
1964 002B		734	US	19 JAN	100.9	99.1	811	790		
1964 002C		735	US	19 JAN	101.0	99.1	816	791		
1964 003A	RELAY 2	737	US	21 JAN	194.7	46.4	7532	1969		
1964 003B		738	US	21 JAN	194.8	46.4	7539	1967		
1964 004B		741	US	25 JAN	108.8	81.5	1300	1039		
1964 004C		742	US	25 JAN	108.6	81.5	1293	1033		
1964 004D		743	US	25 JAN	108.6	81.5	1294	1030		
1964 006A	ELEKTRON 1	746	USSR	30 JAN	163.0	60.9	6600	411		
1964 006B	ELEKTRON 2	748	USSR	30 JAN	1356.4	61.8	60346	8076		
1964 006C - 006AE			USSR	30 JAN	SEE NOTE 4*					4*
1964 006N		18589	USSR	30 JAN	149.8	58.5	4289	1637		
1964 016D	ZOND 1	785	USSR	2 APR	HELIOCENTRIC ORBIT					
1964 026A		801	US	4 JUN	102.2	90.5	901	825		
1964 026B		805	US	4 JUN	102.1	89.9	888	830		
1964 026C		806	US	4 JUN	99.1	90.8	756	673		
1964 026D		809	US	4 JUN	102.5	90.5	912	842		
1964 026E		2986	US	4 JUN	102.6	90.5	923	840		
1964 031A		812	US	18 JUN	101.2	99.8	821	812		
1964 031B		813	US	18 JUN	101.3	99.9	822	814		
1964 031C		815	US	18 JUN	101.1	99.8	818	800		
1964 038A	ELEKTRON 3	829	USSR	10 JUL	161.4	60.8	6472	408		
1964 038C		831	USSR	10 JUL	138.8	60.8	4605	400		
1964 040A		836	US	17 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1964 040B		837	US	17 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1964 041B		843	US	28 JUL	BARYCENTRIC ORBIT					
1964 047A	SYNCOM 3	858	US	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1964 047B		862	US	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1964 049D	COSMOS 41	869	USSR	22 AUG	714.6	70.1	38568	1629		
1964 049E		898	USSR	22 AUG	719.0	70.0	38775	1639		
1964 049F		13091	USSR	22 AUG	714.4	71.1	37879	2307		
1964 051A	EXPLORER 20	870	US	25 AUG	103.6	79.9	1001	856		
1964 051B		871	US	25 AUG	103.2	79.9	978	843		
1964 053A	COSMOS 44	876	USSR	28 AUG	98.7	65.1	792	601		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1964 LAUNCHES (CONT.)										
1964 053B		877	USSR	28 AUG	99.0	65.1	751	668		
1964 053C		21126	USSR	28 AUG	98.9	65.1	747	666		
1964 054A	OGO 1	879	US	5 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1964 063A	NNSS 30019	893	US	6 OCT	106.2	90.1	1068	1029		
1964 063B		897	US	6 OCT	106.4	90.1	1074	1045		
1964 063C		900	US	6 OCT	105.5	90.1	1033	1002		
1964 063D		901	US	6 OCT	106.4	90.1	1071	1044		
1964 063E		902	US	6 OCT	106.4	90.1	1074	1049		
1964 063F		903	US	6 OCT	105.4	90.1	1027	998		
1964 064A	EXPLORER 22	899	US	10 OCT	104.3	79.7	1054	872		
1964 064B		907	US	10 OCT	104.4	79.7	1057	877		
1964 064C		976	US	10 OCT	103.1	79.3	997	808		
1964 064D		977	US	10 OCT	104.9	80.0	1086	888		
1964 073A	MARINER 3	923	US	5 NOV	HELIOCENTRIC ORBIT					
1964 076B	EXPLORER 25	932	US	21 NOV	114.7	81.3	2355	525		
1964 076C		933	US	21 NOV	113.9	81.3	2291	523		
1964 077A	MARINER 4	938	US	28 NOV	HELIOCENTRIC ORBIT					
1964 077B		942	US	28 NOV	HELIOCENTRIC ORBIT					
1964 078C	ZOND 2	945	USSR	30 NOV	HELIOCENTRIC ORBIT					
1964 083A	NNSS 30020	953	US	13 DEC	106.0	89.8	1064	1015		
1964 083B		956	US	13 DEC	105.7	89.8	1054	999		
1964 083C		959	US	13 DEC	105.9	89.8	1067	1006		
1964 083D		965	US	13 DEC	106.1	89.8	1080	1015		
1964 083F		967	US	13 DEC	105.7	89.8	1055	999		
1964 083G		1099	US	13 DEC	105.9	89.8	1066	1006		
1964 083J		1608	US	13 DEC	105.1	89.8	1024	972		
1964 086A	EXPLORER 26	963	US	21 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1965 LAUNCHES										
1965 004A	TIROS 9	978	US	22 JAN	118.9	96.4	2565	701		
1965 004B		979	US	22 JAN	118.7	96.4	2548	700		
1965 004C		1312	US	22 JAN	117.5	96.3	2466	671		
1965 004D		1313	US	22 JAN	120.0	96.4	2637	728		
1965 008A		1001	US	11 FEB	145.4	32.2	2798	2765		
1965 008B		1000	US	11 FEB	145.7	32.1	2803	2783		
1965 008C		1002	US	11 FEB	145.8	32.1	2810	2782		
1965 010B		1087	US	17 FEB	BARYCENTRIC ORBIT					
1965 016A	GREB	1271	US	9 MAR	103.2	70.1	928	893		
1965 016B	GRAVITY GRADIENT 2	1244	US	9 MAR	103.3	70.1	929	895		
1965 016C	GRAVITY GRADIENT 3	1292	US	9 MAR	103.0	70.1	918	885		
1965 016D	SOLRAD 7B	1291	US	9 MAR	103.3	70.1	931	897		
1965 016E	SECOR (EGRS) 3	1208	US	9 MAR	103.3	70.1	928	896		
1965 016F	USCAR 3	1293	US	9 MAR	102.8	70.1	905	874		
1965 016H	SURCAL	1272	US	9 MAR	103.3	70.1	933	897		
1965 016J		1245	US	9 MAR	103.2	70.1	926	891		
1965 016K		12099	US	9 MAR	103.0	70.1	915	882		
1965 020E		1335	USSR	15 MAR	106.2	56.1	1516	589		
1965 020S		1347	USSR	15 MAR	102.0	56.0	1177	528		
1965 020AC		1370	USSR	15 MAR	102.4	56.1	1220	522		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1965 LAUNCHES (CONT.)										
1965 020AH		1392	USSR	15 MAR	104.5	55.9	1421	524		
1965 020AJ		1477	USSR	15 MAR	111.9	55.5	1796	827		
1965 020AC		1478	USSR	15 MAR	109.6	56.1	1793	627		
1965 020AD		1479	USSR	15 MAR	114.8	56.0	2088	806		
1965 020AE		1480	USSR	15 MAR	114.6	56.1	2122	748		
1965 020AV		1495	USSR	15 MAR	103.3	55.6	1216	608		
1965 020CV		1549	USSR	15 MAR	114.4	56.2	2095	764		
1965 020ED		1634	USSR	15 MAR	115.8	56.2	2174	805		
1965 020EH		2334	USSR	15 MAR	110.7	55.7	1729	787		
1965 020EM		2934	USSR	15 MAR	115.4	55.6	1763	1181		
1965 020EN		3038	USSR	15 MAR	107.9	56.3	1672	587		
1965 020ER		3708	USSR	15 MAR	102.8	56.3	1182	598		
1965 020ES		3743	USSR	15 MAR	118.1	56.7	1805	1386		
1965 020ET		3745	USSR	15 MAR	115.3	56.0	1588	1348		
1965 020EU		3749	USSR	15 MAR	107.3	56.2	1587	617		
1965 020EV		3931	USSR	15 MAR	116.6	56.1	1694	1362		
1965 020EY		3965	USSR	15 MAR	117.8	56.3	1793	1366		
1965 020FD		6252	USSR	15 MAR	117.1	56.0	1698	1403		
1965 020FF		13517	USSR	15 MAR	109.3	55.6	1664	724		
1965 023A		1298	US	21 MAR	HELIOCENTRIC ORBIT					
1965 027A		1314	US	3 APR	111.4	90.3	1317	1267		
1965 027B	SECOR (EGRS) 4	1315	US	3 APR	111.4	90.3	1314	1263		
1965 027C - 027D			US	3 APR	SEE NOTE 5*					5*
1965 028A	EARLY BIRD	1317	ITSO	6 APR	1435.4	14.1	35805	35740		
1965 028B		1318	US	6 APR	CURRENT ELEMENTS NOT MAINTAINED					
1965 032A	EXPLORER 27	1328	US	29 APR	107.7	41.2	1314	927		
1965 032B		1358	US	29 APR	107.7	41.2	1315	929		
1965 032D		2011	US	29 APR	108.3	41.2	1250	1046		
1965 034A		1359	US	6 MAY	157.1	32.1	3744	2785		
1965 034B		1360	US	6 MAY	309.9	32.2	14799	2781		
1965 034C		1361	US	6 MAY	145.6	32.1	2804	2777		
1965 034D		2529	US	6 MAY	309.9	32.2	14820	2759		
1965 038A		1377	US	20 MAY	97.2	98.1	744	507		
1965 038B		1378	US	20 MAY	94.5	97.9	553	439		
1965 044A	LUNA 6	1393	USSR	8 JUN	HELIOCENTRIC ORBIT					
1965 048A	NNSS 30040	1420	US	24 JUN	106.6	90.1	1125	1015		
1965 048B		1428	US	24 JUN	106.5	90.1	1106	1017		
1965 048C		1425	US	24 JUN	106.7	90.1	1129	1022		
1965 048D		1435	US	24 JUN	105.8	90.1	1085	979		
1965 048E		2701	US	24 JUN	106.0	90.1	1081	1000		
1965 048F		3592	US	24 JUN	106.0	90.1	1087	999		
1965 051A	TIROS 10	1430	US	2 JUL	100.1	98.8	807	722		
1965 051B		1433	US	2 JUL	99.6	98.7	773	701		
1965 051C		1440	US	2 JUL	94.5	98.5	523	462		
1965 051D		1529	US	2 JUL	101.5	99.1	855	798		
1965 056A	ZOND 3	1454	USSR	18 JUL	HELIOCENTRIC ORBIT					
1965 058A		1458	US	20 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1965 058B		1459	US	20 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1965 063A	SECOR (EGRS) 5	1506	US	10 AUG	122.2	69.2	2421	1132		
1965 063B		1502	US	10 AUG	122.2	69.2	2419	1134		

OBJECTS IN ORBIT

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1965 LAUNCHES (CONT.)										
1965 064A	CENTAUR 6	1503	US	11 AUG	BARYCENTRIC ORBIT					
1965 065A	NNSS 30050	1504	US	13 AUG	107.7	90.0	1169	1069		
1965 065B		1508	US	13 AUG	107.5	89.9	1141	1082		
1965 065C		1510	US	13 AUG	105.6	90.0	1058	986		
1965 065D		1511	US	13 AUG	107.9	90.0	1184	1078		
1965 065E		1512	US	13 AUG	108.0	90.0	1186	1079		
1965 065F		1514	US	13 AUG	107.9	90.0	1184	1075		
1965 065G		1515	US	13 AUG	107.2	90.0	1145	1050		
1965 065H		1520	US	13 AUG	107.9	90.0	1182	1073		
1965 065J		1521	US	13 AUG	108.0	90.0	1186	1080		
1965 065K		1577	US	13 AUG	107.9	90.0	1179	1076		
1965 065L		1522	US	13 AUG	108.0	90.0	1187	1078		
1965 065P		3810	US	13 AUG	107.2	90.0	1145	1049		
1965 065Q		5265	US	13 AUG	107.8	89.9	1153	1093		
1965 070A	COSMOS 80	1570	USSR	3 SEP	115.0	56.1	1538	1368		
1965 070B	COSMOS 81	1571	USSR	3 SEP	115.3	56.1	1544	1395		
1965 070C	COSMOS 82	1572	USSR	3 SEP	115.7	56.1	1553	1417		
1965 070D	COSMOS 83	1573	USSR	3 SEP	116.0	56.1	1561	1443		
1965 070E	COSMOS 84	1574	USSR	3 SEP	116.4	56.1	1569	1469		
1965 070F		1575	USSR	3 SEP	114.6	56.1	1517	1354		
1965 070G		3045	USSR	3 SEP	115.9	55.5	1728	1260		
1965 072A		1580	US	10 SEP	101.2	98.6	995	636		
1965 072D		1583	US	10 SEP	100.2	98.5	914	617		
1965 072E		1931	US	10 SEP	101.7	99.0	1052	625		
1965 072F		1932	US	10 SEP	98.0	98.2	742	581		
1965 073A	COSMOS 86	1584	USSR	18 SEP	115.0	56.1	1624	1290		
1965 073B	COSMOS 87	1585	USSR	18 SEP	115.4	56.1	1636	1314		
1965 073C	COSMOS 88	1586	USSR	18 SEP	115.8	56.1	1648	1336		
1965 073D	COSMOS 89	1587	USSR	18 SEP	116.2	56.1	1657	1365		
1965 073E	COSMOS 90	1588	USSR	18 SEP	116.6	56.1	1668	1391		
1965 073F		1589	USSR	18 SEP	116.8	56.0	1678	1394		
1965 073G		1590	USSR	18 SEP	115.9	56.1	1629	1362		
1965 073H		1591	USSR	18 SEP	116.2	56.1	1644	1379		
1965 073J		1617	USSR	18 SEP	117.0	56.1	1735	1358		
1965 073K		1618	USSR	18 SEP	117.3	56.2	1743	1378		
1965 073L		2647	USSR	18 SEP	116.0	56.1	1645	1352		
1965 078A		1613	US	5 OCT	118.0	144.3	2771	407		
1965 078B		1616	US	5 OCT	116.6	144.2	2644	407		
1965 082B -	082UP		US	15 OCT	SEE NOTE 7*					7*
1965 082MT		3381	US	15 OCT	96.9	32.0	648	568		
1965 089A	EXPLORER 29	1726	US	6 NOV	120.3	59.4	2270	1117		
1965 089B		1729	US	6 NOV	120.3	59.4	2265	1119		
1965 089C		2700	US	6 NOV	119.1	59.6	2223	1060		
1965 089D		2888	US	6 NOV	121.3	59.2	2325	1151		
1965 091A	VENERA 2	1730	USSR	12 NOV	HELIOCENTRIC ORBIT					
1965 092D		1736	USSR	16 NOV	HELIOCENTRIC ORBIT					
1965 093A	EXPLORER 30	1738	US	19 NOV	100.2	59.7	872	667		
1965 093B		1739	US	19 NOV	99.8	59.7	817	683		
1965 093C		2013	US	19 NOV	97.9	59.7	706	608		
1965 093D		2088	US	19 NOV	100.0	59.7	839	679		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1965 LAUNCHES (CONT.)										
1965 096A	A-1	1778	FRANCE	26 NOV	107.6	34.3	1700	528		
1965 096B		1805	FRANCE	26 NOV	106.2	34.3	1577	523		
1965 096D		1996	FRANCE	26 NOV	101.3	34.2	1144	500		
1965 098A	ALOUETTE 2	1804	CANADA	29 NOV	118.4	79.8	2713	501		
1965 098B	EXPLORER 31	1806	US	29 NOV	120.0	79.8	2861	502		
1965 098C		1807	US	29 NOV	118.9	79.8	2759	502		
1965 098D		1808	US	29 NOV	105.8	79.8	1585	475		
1965 098E		1944	US	29 NOV	104.5	79.8	1475	470		
1965 098F		1948	US	29 NOV	113.4	79.9	2274	493		
1965 098G		1951	US	29 NOV	113.4	79.7	2272	492		
1965 098H		2092	US	29 NOV	118.6	79.9	2732	503		
1965 098J		2153	US	29 NOV	118.3	79.7	2705	501		
1965 101A	FR-1	1814	FRANCE	6 DEC	98.8	75.9	708	698		
1965 101B		1815	US	6 DEC	98.6	75.9	697	684		
1965 105A	PIONEER 6	1841	US	16 DEC	HELIOCENTRIC ORBIT					
1965 106A	COSMOS 100	1843	USSR	17 DEC	95.2	65.0	573	483		
1965 106B		1844	USSR	17 DEC	94.4	65.0	500	479		
1965 109A	NNSS 30060	1864	US	22 DEC	104.6	89.1	1059	894		
1965 109B		1865	US	22 DEC	104.7	89.1	1063	898		
1965 109C		2086	US	22 DEC	100.4	89.1	797	757		
1965 109D		2226	US	22 DEC	106.8	89.1	1269	887		
1965 109E		2353	US	22 DEC	104.9	89.4	1105	874		
1965 112Q		1937	USSR	28 DEC	94.3	55.9	498	467		
1966 LAUNCHES										
1966 005A	NNSS 30070	1952	US	28 JAN	105.5	89.9	1185	849		
1966 005B		1953	US	28 JAN	105.6	89.9	1193	852		
1966 005C		2140	US	28 JAN	107.2	90.1	1344	847		
1966 005D		2141	US	28 JAN	103.3	89.8	1020	811		
1966 005E		2889	US	28 JAN	109.4	89.5	1326	1069		
1966 005F		2989	US	28 JAN	103.5	89.9	1016	834		
1966 005J		11991	US	28 JAN	105.0	89.9	1150	841		
1966 006D		2001	USSR	31 JAN	BARYCENTRIC ORBIT					
1966 008A	ESSA 1	1982	US	3 FEB	99.7	97.8	808	683		
1966 008B		1983	US	3 FEB	99.3	97.8	789	661		
1966 008C		2085	US	3 FEB	96.7	97.6	615	581		
1966 008D		2118	US	3 FEB	100.4	97.9	884	667		
1966 008E		2154	US	3 FEB	99.1	97.8	763	671		
1966 013A	D-1A	2016	FRANCE	17 FEB	116.0	34.1	2495	502		
1966 013B		2017	FRANCE	17 FEB	114.7	34.1	2376	503		
1966 013G		2161	FRANCE	17 FEB	108.1	34.1	1773	499		
1966 016A	ESSA 2	2091	US	28 FEB	113.4	100.9	1413	1351		
1966 016B		2096	US	28 FEB	113.4	101.1	1413	1350		
1966 016C		2223	US	28 FEB	111.8	101.1	1381	1237		
1966 016D		2224	US	28 FEB	115.0	101.1	1562	1346		
1966 016E		6214	US	28 FEB	114.2	101.7	1511	1327		
1966 024A	NNSS 30080	2119	US	26 MAR	104.9	89.8	1097	882		
1966 024B		2120	US	26 MAR	105.0	89.8	1105	885		
1966 025A	OV1-4	2121	US	30 MAR	104.0	144.5	1010	883		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1966 LAUNCHES (CONT.)										
1966 025B	OV1-5	2122	US	30 MAR	105.6	144.6	1056	985		
1966 025C		2123	US	30 MAR	105.6	144.6	1056	986		
1966 025D		2124	US	30 MAR	104.0	144.5	1006	885		
1966 025E		3611	US	30 MAR	102.2	144.6	914	814		
1966 025G		5361	US	30 MAR	103.6	144.6	969	892		
1966 025H		5599	US	30 MAR	102.3	144.6	911	827		
1966 026A		2125	US	31 MAR	99.4	98.4	858	605		
1966 026B		2129	US	31 MAR	97.2	98.2	700	550		
1966 026D		2177	US	31 MAR	100.1	99.0	931	592		
1966 026F		2179	US	31 MAR	94.4	98.0	524	449		
1966 027A	LUNA 10	2126	USSR	31 MAR	SELENOCENTRIC ORBIT					
1966 027D		2130	USSR	31 MAR	HELIOCENTRIC ORBIT					
1966 027E		2131	USSR	31 MAR	BARYCENTRIC ORBIT					
1966 027F		2132	USSR	31 MAR	BARYCENTRIC ORBIT					
1966 031A	OAO 1	2142	US	8 APR	100.6	35.0	794	783		
1966 031B		2144	US	8 APR	100.3	35.0	777	763		
1966 034A	OV3-1	2150	US	22 APR	133.2	82.4	4185	340		
1966 034B		2167	US	22 APR	112.2	82.4	2335	323		
1966 040A	NIMBUS 2	2173	US	15 MAY	108.0	100.6	1175	1090		
1966 040B		2174	US	15 MAY	107.8	100.5	1166	1081		
1966 041A	NNSS 30090	2176	US	19 MAY	102.9	90.1	949	837		
1966 041B		2180	US	19 MAY	103.0	90.1	958	841		
1966 041C		2225	US	19 MAY	98.7	90.0	723	671		
1966 041D		2644	US	19 MAY	105.0	90.1	1155	831		
1966 041E		3591	US	19 MAY	102.9	90.1	950	838		
1966 041F		4555	US	19 MAY	101.7	90.0	887	786		
1966 045B		2187	US	30 MAY	BARYCENTRIC ORBIT					
1966 049A	OGO 3	2195	US	7 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 052A		2201	US	10 JUN	142.9	40.8	4706	643		
1966 052B		2206	US	10 JUN	142.5	40.9	4673	645		
1966 052C		2498	US	10 JUN	138.4	40.7	4384	586		
1966 052D		2516	US	10 JUN	144.5	41.0	4783	703		
1966 053A		2207	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053B		2215	US	16 JUN	1334.5	11.6	33897	33650		
1966 053C		2216	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053D		2217	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053E		2218	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053F		2219	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053G		2220	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053H		2221	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1966 053J		2222	US	16 JUN	1349.4	12.1	34744	33398		
1966 056A	PAGEOS 1	2253	US	24 JUN	177.3	85.4	5536	2613		
1966 056B		2255	US	24 JUN	181.1	86.9	4281	4171		
1966 056C		2256	US	24 JUN	181.3	86.9	4280	4187		
1966 056D		2511	US	24 JUN	181.5	87.0	4262	4215		
1966 056G		8066	US	24 JUN	160.7	81.9	6372	450		
1966 056H		8074	US	24 JUN	172.0	85.9	6324	1408		
1966 056AH		9468	US	24 JUN	180.2	85.5	4735	3645		
1966 058A	EXPLORER 33	2258	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1966 058C		2260	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1966 LAUNCHES (CONT.)										
1966 063B		2327	US	14 JUL	104.0	144.2	961	930		
1966 063C		2328	US	14 JUL	105.2	144.2	1012	998		
1966 063D		2329	US	14 JUL	104.5	144.2	973	968		
1966 063E		2337	US	14 JUL	105.2	144.2	1006	998		
1966 070A	OV3-3	2389	US	4 AUG	122.3	81.4	3219	349		
1966 070D		2800	US	4 AUG	126.7	81.5	3544	409		
1966 073B		2395	US	10 AUG	BARYCENTRIC ORBIT					
1966 075A	PIONEER 7	2398	US	17 AUG	HELIOCENTRIC ORBIT					
1966 075C		2402	US	17 AUG	HELIOCENTRIC ORBIT					
1966 076A	NNSS 30100	2401	US	18 AUG	106.5	88.8	1088	1039		
1966 076B		2413	US	18 AUG	106.6	88.9	1093	1042		
1966 076C		2580	US	18 AUG	104.8	89.2	1057	914		
1966 076D		2702	US	18 AUG	108.0	88.6	1199	1064		
1966 077A		2403	US	19 AUG	167.4	89.7	3707	3659		
1966 077B	SECOR (EGRS) 7	2411	US	19 AUG	167.5	89.7	3698	3673		
1966 077C	ERS 15	2412	US	19 AUG	167.6	89.7	3699	3681		
1966 078A	LUNA 11	2406	USSR	24 AUG	SELENOCENTRIC ORBIT					
1966 082A		2418	US	16 SEP	100.2	98.4	859	675		
1966 082B		2422	US	16 SEP	100.1	98.4	852	672		
1966 084B		2426	US	20 SEP	BARYCENTRIC ORBIT					
1966 087A	ESSA 3	2435	US	2 OCT	114.5	100.9	1483	1384		
1966 087B		2436	US	2 OCT	114.5	101.0	1482	1380		
1966 087C		2518	US	2 OCT	115.8	100.8	1557	1430		
1966 087D		2775	US	2 OCT	113.2	100.9	1470	1278		
1966 087E		6213	US	2 OCT	112.6	101.9	1373	1321		
1966 087F		8791	US	2 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1966 089A		2491	US	5 OCT	167.5	90.0	3721	3656		
1966 089B	SECOR (EGRS) 8	2520	US	5 OCT	167.6	90.0	3707	3674		
1966 094A	LUNA 12	2508	USSR	22 OCT	SELENOCENTRIC ORBIT					
1966 095B		2513	US	25 OCT	BARYCENTRIC ORBIT					
1966 096A	INTELSAT 2 F-1	2514	ITSO	26 OCT	718.0	17.8	37109	3258		
1966 096C		11792	US	26 OCT	460.3	17.9	26345	394		
1966 110A	ATS 1	2608	US	7 DEC	1435.2	14.2	35803	35736		
1966 111A	OV1-9	2610	US	11 DEC	140.0	99.1	4634	472		
1966 111B	OV1-10	2611	US	11 DEC	96.3	93.4	616	547		
1966 111C		2621	US	11 DEC	97.8	93.4	705	605		
1966 111D		2622	US	11 DEC	139.3	99.1	4570	472		
1967 LAUNCHES										
1967 001A	INTELSAT 2 F-2	2639	ITSO	11 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 001D		2643	US	11 JAN	425.4	26.8	24399	319		
1967 001S		5987	US	11 JAN	514.6	26.2	29343	442		
1967 001T		5988	US	11 JAN	131.7	26.6	4229	166		
1967 001V		5990	US	11 JAN	113.6	26.7	2530	250		
1967 001W		5998	US	11 JAN	362.7	29.8	20687	251		
1967 001X		6779	US	11 JAN	656.4	28.0	36591	690		
1967 001AM		14756	US	11 JAN	360.1	26.8	20536	237		
1967 001AN		19518	US	11 JAN	510.9	26.6	29023	559		
1967 001AR		20102	US	11 JAN	525.0	26.9	29767	589		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1967 LAUNCHES (CONT.)										
1967 003A		2645	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003B		2649	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003C		2650	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003D		2651	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003E		2652	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003F		2653	US	18 JAN	1336.4	9.0	34029	33594		
1967 003G		2654	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003H		2655	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 003J		2660	US	18 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1967 006A	ESSA 4	2657	US	26 JAN	113.4	102.1	1437	1323		
1967 006B		2661	US	26 JAN	113.5	102.0	1438	1339		
1967 006C		2706	US	26 JAN	114.2	102.1	1445	1391		
1967 006D		2707	US	26 JAN	112.5	101.8	1458	1228		
1967 006E		5971	US	26 JAN	113.1	101.9	1453	1280		
1967 010A		2669	US	8 FEB	101.1	99.1	847	771		
1967 010B		2741	US	8 FEB	101.0	99.1	848	767		
1967 011A	DIADEME 1	2674	FRANCE	8 FEB	101.4	39.9	1097	549		
1967 011B		2671	FRANCE	8 FEB	102.4	40.0	1184	555		
1967 014A	DIADEME 2	2680	FRANCE	15 FEB	108.6	39.4	1737	583		
1967 014B		2682	FRANCE	15 FEB	109.1	39.5	1786	582		
1967 014C		2684	FRANCE	15 FEB	106.3	40.0	1541	566		
1967 014F		2685	FRANCE	15 FEB	105.4	38.9	1465	560		
1967 014J		14505	FRANCE	15 FEB	104.9	38.8	1415	562		
1967 014M		18911	FRANCE	15 FEB	108.6	38.9	1768	554		
1967 014N		18928	FRANCE	15 FEB	93.9	39.4	533	392		
1967 026A	INTELSAT 2 F-3	2717	ITSO	23 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1967 034A	NNSS 30120	2754	US	14 APR	106.2	90.1	1063	1038		
1967 034B		2755	US	14 APR	106.4	90.1	1071	1044		
1967 034C		2777	US	14 APR	103.3	90.3	1015	809		
1967 034D		2778	US	14 APR	108.2	90.2	1238	1045		
1967 034E		4843	US	14 APR	106.6	90.4	1092	1046		
1967 035B		2764	US	17 APR	BARYCENTRIC ORBIT					
1967 036A	ESSA 5	2757	US	20 APR	113.5	102.0	1419	1352		
1967 036B		2758	US	20 APR	113.5	102.0	1417	1353		
1967 036C		2976	US	20 APR	112.3	102.1	1408	1256		
1967 036D		2977	US	20 APR	114.5	101.4	1481	1387		
1967 040A		2765	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040B		2766	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040C	ERS 18	2767	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040D	ERS 20	2768	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040E	ERS 27	2769	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 040F		2770	US	28 APR	CURRENT ELEMENTS NOT MAINTAINED					
1967 043B		2780	US	9 MAY	93.0	84.9	447	392		
1967 045A	COSMOS 158	2801	USSR	15 MAY	100.3	74.0	811	729		
1967 045B		2802	USSR	15 MAY	100.0	74.0	811	709		
1967 048A	NNSS 30130	2807	US	18 MAY	106.7	89.6	1090	1059		
1967 048B		2811	US	18 MAY	106.8	89.6	1091	1062		
1967 048D		19222	US	18 MAY	100.0	89.6	795	725		
1967 053A		2826	US	31 MAY	101.5	69.9	834	825		
1967 053B		2825	US	31 MAY	103.2	70.0	914	901		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1967 LAUNCHES (CONT.)										
1967 053C	GRAVITY GRADIENT 4	2828	US	31 MAY	103.1	70.0	914	900		
1967 053D	GRAVITY GRADIENT 5	2834	US	31 MAY	103.2	70.0	916	903		
1967 053E		2847	US	31 MAY	102.9	70.0	903	892		
1967 053F		2872	US	31 MAY	103.1	70.0	909	898		
1967 053G		2873	US	31 MAY	103.1	70.0	913	899		
1967 053H		2874	US	31 MAY	103.2	70.0	916	902		
1967 053J		2909	US	31 MAY	101.2	70.0	818	814		
1967 053K		19245	US	31 MAY	102.6	70.0	889	875		
1967 060A	MARINER 5	2845	US	14 JUN	HELIOCENTRIC ORBIT					
1967 060B		2846	US	14 JUN	HELIOCENTRIC ORBIT					
1967 065A	SECOR (EGRS) 9	2861	US	29 JUN	172.1	90.1	3947	3791		
1967 065B	AURORA 1	2876	US	29 JUN	172.1	90.1	3948	3791		
1967 065C		2877	US	29 JUN	172.1	90.1	3952	3787		
1967 066A	TITAN 3 C-14	2862	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1967 066B		2863	US	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1967 066C		2864	US	1 JUL	1312.4	10.8	33562	33096		
1967 066D		2865	US	1 JUL	1313.7	10.7	33578	33130		
1967 066E		2866	US	1 JUL	1316.1	10.7	33628	33178		
1967 066F	DODGE	2867	US	1 JUL	1319.2	10.7	33679	33251		
1967 066G		2868	US	1 JUL	1319.1	10.7	33650	33279		
1967 068B		2883	US	14 JUL	BARYCENTRIC ORBIT					
1967 070A	EXPLORER 35	2884	US	19 JUL	SELENOCENTRIC ORBIT					
1967 075B		2908	US	1 AUG	BARYCENTRIC ORBIT					
1967 080A		2920	US	23 AUG	101.9	99.0	874	819		
1967 080B		2940	US	23 AUG	101.8	98.9	870	816		
1967 084B		2938	US	8 SEP	BARYCENTRIC ORBIT					
1967 092A	NNSS 30140	2965	US	25 SEP	106.5	89.3	1100	1028		
1967 092B		2967	US	25 SEP	106.5	89.2	1100	1032		
1967 092C		2994	US	25 SEP	103.7	89.4	1006	859		
1967 092D		3122	US	25 SEP	108.8	89.1	1316	1029		
1967 094A	INTELSAT 2 F-4	2969	ITSO	28 SEP	1437.0	14.1	36730	34877		
1967 094C		2971	US	28 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1967 096A		2980	US	11 OCT	99.2	99.2	797	641		
1967 096B		2985	US	11 OCT	99.0	99.2	785	636		
1967 104B		3019	USSR	27 OCT	95.7	64.1	633	469		
1967 111A	ATS 3	3029	US	5 NOV	1436.1	13.9	35851	35723		
1967 112B		3034	US	7 NOV	BARYCENTRIC ORBIT					
1967 114A	ESSA 6	3035	US	10 NOV	114.8	102.3	1483	1406		
1967 114B		3036	US	10 NOV	114.8	102.3	1483	1407		
1967 114C		3051	US	10 NOV	114.1	101.5	1481	1343		
1967 114D		3123	US	10 NOV	115.4	102.6	1493	1449		
1967 114E		5443	US	10 NOV	114.6	101.6	1483	1386		
1967 116A	COSMOS 192	3047	USSR	23 NOV	99.2	74.0	726	717		
1967 116B		3048	USSR	23 NOV	99.1	74.0	719	709		
1967 123A	PIONEER 8	3066	US	13 DEC	HELIOCENTRIC ORBIT					
1967 127A	COSMOS 198	3081	USSR	27 DEC	103.4	65.1	944	890		
1968 LAUNCHES										
1968 001B		3092	US	7 JAN	BARYCENTRIC ORBIT					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1968 LAUNCHES (CONT.)										
1968 002A	EXPLORER 36	3093	US	11 JAN	112.2	105.8	1572	1079		
1968 002B		3094	US	11 JAN	112.1	105.8	1564	1077		
1968 002C		3126	US	11 JAN	112.3	106.1	1581	1082		
1968 002D		3127	US	11 JAN	112.1	105.3	1568	1075		
1968 011A	COSMOS 203	3129	USSR	20 FEB	109.2	74.1	1199	1181		
1968 011B		3131	USSR	20 FEB	109.2	74.1	1201	1180		
1968 012A	NNSS 30180	3133	US	2 MAR	106.7	90.0	1130	1014		
1968 012B		3137	US	2 MAR	106.7	90.0	1135	1015		
1968 012C		3213	US	2 MAR	104.6	90.0	1080	874		
1968 012D		3214	US	2 MAR	108.6	90.1	1305	1016		
1968 013A	ZOND 4	3134	USSR	2 MAR	HELIOCENTRIC ORBIT					
1968 014A	OGO 5	3138	US	4 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1968 014B		3145	US	4 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1968 019B		3151	USSR	14 MAR	92.0	81.2	385	357		
1968 023A	COSMOS 209	3158	USSR	22 MAR	103.0	65.3	938	866		
1968 026A	OV1-13	3173	US	6 APR	198.8	100.0	9242	565		
1968 026B	OV1-14	3174	US	6 APR	207.1	100.0	9867	569		
1968 026C		3177	US	6 APR	207.0	100.0	9859	567		
1968 026D		3212	US	6 APR	198.3	100.0	9194	581		
1968 027A	LUNA 14	3178	USSR	7 APR	SELENOCENTRIC ORBIT					
1968 040A	COSMOS 220	3229	USSR	7 MAY	98.2	74.0	703	638		
1968 040B		3230	USSR	7 MAY	97.8	74.0	687	623		
1968 042A		3266	US	23 MAY	101.8	99.0	884	806		
1968 042B		3271	US	23 MAY	101.8	98.9	880	804		
1968 050A		3284	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050B		3285	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050C		3286	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050D		3287	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050E		3288	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050F		3289	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050G		3290	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050H		3291	US	13 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1968 050J		3292	US	13 JUN	1363.7	12.4	35039	33676		
1968 055A	EXPLORER 38	3307	US	4 JUL	224.2	120.8	5854	5841		
1968 055B		3315	US	4 JUL	155.7	120.7	5742	675		
1968 055C		3848	US	4 JUL	224.1	120.8	5858	5829		
1968 055D		4841	US	4 JUL	155.3	120.8	5746	637		
1968 063A		3334	US	6 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1968 066B	EXPLORER 40	3338	US	8 AUG	117.9	80.7	2495	677		
1968 066C		3341	US	8 AUG	117.8	80.7	2481	678		
1968 066D		3342	US	8 AUG	107.4	80.8	1560	650		
1968 066E		3343	US	8 AUG	103.3	80.5	1242	582		
1968 066F		3390	US	8 AUG	108.3	80.6	1649	649		
1968 066G		3391	US	8 AUG	107.4	80.7	1599	610		
1968 066H		3392	US	8 AUG	111.0	80.7	1871	675		
1968 066J		3393	US	8 AUG	108.9	80.6	1700	650		
1968 069A	ESSA 7	3345	US	16 AUG	114.9	101.4	1470	1429		
1968 069B		3346	US	16 AUG	114.8	101.4	1463	1426		
1968 069C		3416	US	16 AUG	113.6	101.9	1485	1299		
1968 069D		3417	US	16 AUG	116.1	102.3	1557	1454		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1968 LAUNCHES (CONT.)										
1968 069E		3974	US	16 AUG	114.9	102.1	1477	1421		
1968 069F		3975	US	16 AUG	114.8	101.5	1482	1414		
1968 069G		4499	US	16 AUG	115.1	101.4	1480	1435		
1968 081A	OV2-5	3428	US	26 SEP	1417.3	11.9	36029	34806		
1968 081C	ERS 21	3430	US	26 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1968 081D	LES 6	3431	US	26 SEP	1435.2	12.3	35981	35555		
1968 081E		3432	US	26 SEP	1418.5	12.0	35818	35064		
1968 091A	COSMOS 249	3504	USSR	20 OCT	111.5	62.4	2079	509		
1968 091B - 91DP			USSR	20 OCT	SEE NOTE 8*					8*
1968 092A		3510	US	23 OCT	101.0	98.6	830	783		
1968 092B		3522	US	23 OCT	100.9	98.7	824	779		
1968 097A	COSMOS 252	3530	USSR	1 NOV	112.0	62.3	2099	542		
1968 097B - 097EU			USSR	1 NOV	SEE NOTE 10*					10*
1968 100A	PIONEER 9	3533	US	8 NOV	HELIOCENTRIC ORBIT					
1968 106A	COSMOS 256	3576	USSR	30 NOV	109.3	74.0	1220	1170		
1968 106B		3577	USSR	30 NOV	109.2	74.0	1214	1163		
1968 110A	OAO-A2	3597	US	7 DEC	99.9	35.0	759	750		
1968 110B		3598	US	7 DEC	99.6	35.0	778	699		
1968 112B		3605	US	12 DEC	114.3	80.4	1466	1378		
1968 112C		3617	US	12 DEC	114.0	80.2	1443	1374		
1968 112D		3618	US	12 DEC	114.7	80.5	1504	1375		
1968 112E		3840	US	12 DEC	114.4	80.6	1454	1402		
1968 114A	ESSA 8	3615	US	15 DEC	114.6	101.7	1461	1411		
1968 114B		3616	US	15 DEC	115.0	101.8	1468	1445		
1968 114C		3811	US	15 DEC	112.8	102.0	1463	1247		
1968 114D		3812	US	15 DEC	116.3	102.4	1571	1458		
1968 116A	INTELSAT 3 F-2	3623	ITSO	19 DEC	1475.2	14.4	37131	35964		
1968 118B		3627	US	21 DEC	HELIOCENTRIC ORBIT					
1969 LAUNCHES										
1969 009A	ISIS 1	3669	CANADA	30 JAN	127.7	88.4	3471	575		
1969 009B		3670	US	30 JAN	126.7	88.4	3383	572		
1969 010B		3673	US	5 FEB	114.0	80.4	1432	1388		
1969 010C		3841	US	5 FEB	113.7	80.2	1419	1369		
1969 011A	INTELSAT 3 F-3	3674	ITSO	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 011B		5977	US	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 013A		3691	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 013B		3692	US	9 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1969 014A	MARINER 6	3759	US	25 FEB	HELIOCENTRIC ORBIT					
1969 014B		3760	US	25 FEB	HELIOCENTRIC ORBIT					
1969 016A	ESSA 9	3764	US	26 FEB	115.2	101.4	1502	1423		
1969 016B		3767	US	26 FEB	115.1	101.4	1497	1418		
1969 018B		3770	US	3 MAR	HELIOCENTRIC ORBIT					
1969 024A	COSMOS 272	3818	USSR	17 MAR	109.2	74.0	1204	1177		
1969 024B		3819	USSR	17 MAR	109.1	74.0	1192	1178		
1969 024C		6289	USSR	17 MAR	108.8	74.0	1177	1166		
1969 025C	OV1-19	3825	US	18 MAR	151.5	104.7	5591	481		
1969 025E		3827	US	18 MAR	150.4	104.8	5490	489		
1969 029A	METEOR	3835	USSR	26 MAR	96.1	81.2	585	554		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1969 LAUNCHES (CONT.)										
1969 030A	MARINER 7	3837	US	27 MAR	HELIOCENTRIC ORBIT					
1969 030B		3845	US	27 MAR	HELIOCENTRIC ORBIT					
1969 036A		3889	US	13 APR	CURRENT ELEMENTS NOT MAINTAINED					
1969 037A	NIMBUS 3	3890	US	14 APR	107.2	100.0	1128	1069		
1969 037B	SECOR (EGRS) 13	3891	US	14 APR	107.2	100.0	1126	1068		
1969 037C		3892	US	14 APR	107.3	100.0	1130	1073		
1969 043B		3943	US	18 MAY	HELIOCENTRIC ORBIT					
1969 043C	LM/DESCENT	3948	US	18 MAY	SELENOCENTRIC ORBIT					
1969 043D	LM/ASCENT	3949	US	18 MAY	HELIOCENTRIC ORBIT					
1969 045A	INTELSAT 3 F-4	3947	ITSO	22 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046A	OV5-5/ERS-29	3950	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046B	OV5-6	3951	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046C	OV5-9	3952	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046D		3954	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046E		3955	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 046F		3956	US	23 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1969 053B		3993	US	21 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1969 059B		4040	US	16 JUL	HELIOCENTRIC ORBIT					
1969 059C	LUNAR MODULE	4041	US	16 JUL	SELENOCENTRIC ORBIT					9*
1969 062A		4047	US	23 JUL	100.9	98.9	835	768		
1969 062B		4048	US	23 JUL	100.8	98.8	830	765		
1969 064C		4053	US	26 JUL	123.6	30.3	3415	263		
1969 069A	ATS 5	4068	US	12 AUG	1447.4	13.5	36031	35982		
1969 069B		4069	US	12 AUG	703.3	16.8	37373	2264		
1969 069C		5991	US	12 AUG	682.2	17.2	36497	2086		
1969 069D		21052	US	12 AUG	1466.8	13.2	36933	35836		
1969 070A	COSMOS 292	4070	USSR	13 AUG	99.4	74.0	735	719		
1969 070B		4071	USSR	13 AUG	99.0	74.0	722	698		
1969 070C		4084	USSR	13 AUG	99.7	74.1	760	728		
1969 070D		18912	USSR	13 AUG	98.3	74.0	708	648		
1969 082B		4256	US	30 SEP	103.1	70.0	922	891		
1969 082C		4257	US	30 SEP	103.3	70.0	928	896		
1969 082D		4259	US	30 SEP	103.3	70.0	930	897		
1969 082E		4237	US	30 SEP	103.3	70.0	929	896		
1969 082F		4247	US	30 SEP	103.3	70.0	928	896		
1969 082G		4295	US	30 SEP	103.3	70.0	929	896		
1969 082H		4168	US	30 SEP	103.3	70.0	928	896		
1969 082J		4166	US	30 SEP	101.1	70.0	816	802		
1969 082K		4132	US	30 SEP	102.2	70.0	872	849		
1969 082L - 082LF			US	30 SEP	SEE NOTE 11*					11*
1969 084A	METEOR	4119	USSR	6 OCT	95.5	81.2	555	528		
1969 084B		4120	USSR	6 OCT	94.3	81.2	529	443		
1969 091A	COSMOS 304	4138	USSR	21 OCT	99.6	74.0	749	731		
1969 091B		4139	USSR	21 OCT	98.9	74.0	712	703		
1969 097A	GRS-A/AZUR	4221	FRG	8 NOV	111.2	102.7	2187	373		
1969 097B		4222	US	8 NOV	101.9	102.9	1347	353		
1969 099B		4226	US	14 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1969 101A	SKYNET A	4250	UK	22 NOV	1436.2	13.0	35896	35678		
1969 101B		4251	US	22 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1969 103A	COSMOS 312	4254	USSR	24 NOV	108.5	74.0	1174	1138		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1969 LAUNCHES (CONT.)										
1969 103B		4255	USSR	24 NOV	108.3	74.0	1156	1139		
1970 LAUNCHES										
1970 003A	INTELSAT 3 F-6	4297	ITSO	15 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1970 003B		4298	US	15 JAN	525.2	28.0	30027	343		
1970 008A	ITOS 1	4320	US	23 JAN	115.0	101.3	1477	1431		
1970 008B	OSCAR 5	4321	AUSTRL	23 JAN	115.0	101.3	1475	1431		
1970 008C		4322	US	23 JAN	115.0	101.3	1476	1432		
1970 009A	SERT 2	4327	US	4 FEB	106.0	99.2	1045	1037		
1970 011A	OHSUMI	4330	JAPAN	11 FEB	115.7	31.1	2651	326		
1970 012A		4331	US	11 FEB	100.8	98.9	841	750		
1970 012B		4332	US	11 FEB	100.8	98.9	844	752		
1970 021A	NATO 1	4353	NATO	20 MAR	1436.9	12.5	35813	35789		
1970 021B		4354	US	20 MAR	527.4	26.3	29851	638		
1970 021C		5975	US	20 MAR	542.4	25.5	30963	343		
1970 025A	NIMBUS 4	4362	US	8 APR	107.1	99.9	1097	1085		
1970 025B	TOPO 1	4363	US	8 APR	106.9	99.7	1084	1082		
1970 025C - 025QM			US	8 APR	SEE NOTE 12*					12*
1970 025QG		21721	US	8 APR	106.4	100.1	1064	1057		
1970 027A		4366	US	8 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 027B		4368	US	8 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 028A	COSMOS 332	4369	USSR	11 APR	99.5	74.0	736	728		
1970 028B		4370	USSR	11 APR	99.1	74.0	728	703		
1970 028C		14814	USSR	11 APR	98.5	74.0	694	677		
1970 032A	INTELSAT 3 F-7	4376	ITSO	23 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 032B		4377	US	23 APR	CURRENT ELEMENTS NOT MAINTAINED					
1970 034A	MAO 1	4382	•PRC	24 APR	111.7	68.4	2178	430		
1970 034B		4392	PRC	24 APR	101.1	68.3	1208	412		
1970 036A	COSMOS 336	4383	USSR	25 APR	115.4	74.0	1484	1461		
1970 036B	COSMOS 337	4384	USSR	25 APR	116.2	74.0	1550	1466		
1970 036C	COSMOS 338	4385	USSR	25 APR	115.8	74.0	1516	1465		
1970 036D	COSMOS 339	4386	USSR	25 APR	115.0	74.0	1467	1443		
1970 036E	COSMOS 340	4387	USSR	25 APR	114.6	74.0	1467	1405		
1970 036F	COSMOS 341	4388	USSR	25 APR	113.9	74.0	1466	1340		
1970 036G	COSMOS 342	4389	USSR	25 APR	113.5	74.0	1466	1308		
1970 036H	COSMOS 343	4390	USSR	25 APR	114.2	74.0	1466	1373		
1970 036J		4391	USSR	25 APR	116.6	74.0	1586	1466		
1970 037A	METEOR	4393	USSR	28 APR	96.0	81.2	588	542		
1970 037B		4394	USSR	28 APR	96.6	81.2	667	527		
1970 046A		4418	US	19 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1970 046B		4511	US	19 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1970 047A	METEOR	4419	USSR	23 JUN	101.8	81.2	874	814		
1970 047B		4420	USSR	23 JUN	102.0	81.2	920	789		
1970 055A	INTELSAT 3 F-8	4478	ITSO	23 JUL	1408.2	13.7	36638	33839		
1970 055B		4486	US	23 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1970 062A	SKYNET B	4493	UK	19 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1970 067A	NNSS 30190	4507	US	27 AUG	106.7	90.1	1202	945		
1970 067B		4515	US	27 AUG	106.8	90.1	1207	946		
1970 067C		5036	US	27 AUG	102.8	90.1	909	874		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1970 LAUNCHES (CONT.)										
1970 067D		5447	US	27 AUG	109.1	90.1	1431	941		
1970 069A		4510	US	1 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1970 070A		4512	US	3 SEP	100.7	98.9	838	740		
1970 070B		4513	US	3 SEP	100.7	99.0	843	742		
1970 079A	COSMOS 367	4564	USSR	3 OCT	104.5	65.3	1017	920		
1970 083A	COSMOS 371	4578	USSR	12 OCT	99.3	74.0	728	724		
1970 083B		4579	USSR	12 OCT	99.1	74.0	721	705		
1970 085A	METEOR	4583	USSR	15 OCT	94.2	81.2	481	477		
1970 085B		4584	USSR	15 OCT	94.8	81.2	556	462		
1970 086A	COSMOS 372	4588	USSR	16 OCT	100.4	74.1	787	768		
1970 086B		4589	USSR	16 OCT	100.2	74.1	781	751		
1970 086C		5357	USSR	16 OCT	98.3	74.0	685	673		
1970 086D		5358	USSR	16 OCT	99.2	74.0	724	714		
1970 089A	COSMOS 374	4594	USSR	23 OCT	107.1	62.9	1649	535		
1970 089B - 089DG			USSR	23 OCT	SEE NOTE 13*					13*
1970 091A	COSMOS 375	4598	USSR	30 OCT	111.3	62.8	2011	562		
1970 091B - 091AX			USSR	30 OCT	SEE NOTE 15*					15*
1970 093A		4630	US	6 NOV	1197.9	16.2	36126	25844		
1970 093B		4632	US	6 NOV	1197.7	16.2	36144	25818		
1970 102A	COSMOS 381	4783	USSR	2 DEC	104.8	74.0	1005	960		
1970 102B		4784	USSR	2 DEC	104.6	74.0	996	957		
1970 102C		4840	USSR	2 DEC	94.4	74.0	508	475		
1970 102D		5225	USSR	2 DEC	104.0	74.0	962	933		
1970 102E		8764	USSR	2 DEC	104.2	74.0	974	937		
1970 102F		9794	USSR	2 DEC	99.1	74.0	725	708		
1970 103A	COSMOS 382	4786	USSR	2 DEC	171.0	55.9	5261	2393		
1970 103B		4789	USSR	2 DEC	158.8	51.6	5083	1588		
1970 103C		4790	USSR	2 DEC	159.1	51.6	5084	1612		
1970 103G		12854	USSR	2 DEC	145.2	50.5	3942	1600		
1970 106A	NOAA 1	4793	US	11 DEC	114.8	101.3	1471	1421		
1970 106B		4794	US	11 DEC	114.9	101.3	1478	1420		
1970 106C		8828	US	11 DEC	116.4	102.3	1540	1494		
1970 108A	COSMOS 385	4799	USSR	12 DEC	104.6	74.0	977	972		
1970 108B		4800	USSR	12 DEC	104.5	74.0	976	962		
1970 109B		4802	FRANCE	12 DEC	96.3	15.0	613	551		
1970 113A	COSMOS 389	4813	USSR	18 DEC	96.0	81.2	577	552		
1970 113B		4814	USSR	18 DEC	96.5	81.2	635	549		
1971 LAUNCHES										
1971 000A		4924	US	UNKN	95.6	18.0	906	192		14*
1971 003A	METEOR	4849	USSR	20 JAN	95.7	81.2	558	545		
1971 003B		4850	USSR	20 JAN	95.5	81.2	587	495		
1971 003C		18277	USSR	20 JAN	94.2	81.2	508	448		
1971 006A	INTELSAT 4 F-2	4881	ITSO	26 JAN	1456.9	12.1	36239	36147		
1971 006B		4882	US	26 JAN	653.4	28.4	36474	652		
1971 009A	NATO 2	4902	NATO	3 FEB	1437.5	12.8	36256	35370		
1971 009B		4903	US	3 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1971 009C		5986	US	3 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1971 010A	COSMOS 394	4922	USSR	9 FEB	95.5	65.8	551	530		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1971 LAUNCHES (CONT.)										
1971 011A	TANSEI 1	4952	JAPAN	16 FEB	106.1	29.7	1105	988		
1971 011B		5126	JAPAN	16 FEB	104.8	29.7	993	975		
1971 012A		4953	US	17 FEB	100.3	98.7	800	742		
1971 012B		4954	US	17 FEB	100.4	98.7	803	747		
1971 015A	COSMOS 397	4964	USSR	25 FEB	113.2	65.7	2180	563		
1971 015B - 015DV			USSR	25 FEB	SEE NOTE 16*					16*
1971 015DJ		18590	USSR	25 FEB	101.9	65.8	1174	518		
1971 016A	COSMOS 398	4966	USSR	26 FEB	117.5	51.5	2945	191		
1971 020A	COSMOS 400	5050	USSR	18 MAR	104.9	65.8	996	986		
1971 020B		5051	USSR	18 MAR	104.7	65.8	1011	950		
1971 020C		5052	USSR	18 MAR	104.9	65.8	994	983		
1971 021A		5053	US	21 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1971 021B		5054	US	21 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1971 024A	ISIS 2	5104	CANADA	1 APR	113.5	88.2	1421	1355		
1971 024B		5106	US	1 APR	113.5	88.2	1419	1350		
1971 024C		5360	US	1 APR	113.5	88.3	1421	1356		
1971 025A	COSMOS 402	5105	USSR	1 APR	104.9	65.0	1028	948		
1971 028A	COSMOS 405	5117	USSR	7 APR	96.8	81.2	606	600		
1971 028B		5118	USSR	7 APR	97.0	81.2	664	563		
1971 028D		5724	USSR	7 APR	96.0	81.2	568	566		
1971 031B		5143	USSR	17 APR	94.7	81.2	539	470		
1971 035A	COSMOS 407	5174	USSR	23 APR	100.6	74.0	801	773		
1971 035B		5175	USSR	23 APR	100.4	74.0	799	754		
1971 035C		5300	USSR	23 APR	99.4	74.0	741	722		
1971 035D		5301	USSR	23 APR	99.9	74.0	763	740		
1971 038A	COSMOS 409	5180	USSR	28 APR	109.2	74.0	1209	1174		
1971 038B		5181	USSR	28 APR	109.0	74.0	1224	1138		
1971 039A		5204	US	5 MAY	ELEMENTS NOT AVAILABLE					
1971 039B		5205	US	5 MAY	ELEMENTS NOT AVAILABLE					
1971 041A	COSMOS 411	5210	USSR	7 MAY	113.8	74.0	1488	1313		
1971 041B	COSMOS 412	5211	USSR	7 MAY	116.1	74.0	1533	1477		
1971 041C	COSMOS 413	5212	USSR	7 MAY	115.7	74.0	1505	1472		
1971 041D	COSMOS 414	5213	USSR	7 MAY	115.1	74.0	1491	1424		
1971 041E	COSMOS 415	5214	USSR	7 MAY	115.4	74.0	1499	1448		
1971 041F	COSMOS 416	5215	USSR	7 MAY	114.4	74.0	1489	1369		
1971 041G	COSMOS 417	5216	USSR	7 MAY	114.1	74.0	1490	1340		
1971 041H	COSMOS 418	5217	USSR	7 MAY	114.7	74.0	1490	1397		
1971 041J		5218	USSR	7 MAY	116.8	74.0	1591	1484		
1971 045A	MARS 2	5234	USSR	19 MAY	AREOCENTRIC ORBIT					
1971 046A	COSMOS 422	5238	USSR	22 MAY	104.9	74.0	1002	981		
1971 046B		5239	USSR	22 MAY	104.8	74.0	993	978		
1971 049A	MARS 3	5252	USSR	28 MAY	AREOCENTRIC ORBIT					
1971 051A	MARINER 9	5261	US	30 MAY	AREOCENTRIC ORBIT					
1971 051B		5267	US	30 MAY	HELIOCENTRIC ORBIT					
1971 052A	COSMOS 426	5281	USSR	4 JUN	100.3	74.0	1185	357		
1971 052B		5282	USSR	4 JUN	101.2	74.0	1274	360		
1971 059B		5328	USSR	16 JUL	95.0	81.2	555	479		
1971 063D	APOLLO 15 SUBSATELLITE	5377	US	26 JUL	SELENOCENTRIC ORBIT					
1971 067B	OV1-21	5397	US	7 AUG	101.7	87.6	897	778		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1971 LAUNCHES (CONT.)										
1971 067E		5398	US	7 AUG	101.0	87.6	859	757		
1971 067J		5405	US	7 AUG	96.9	87.6	630	590		
1971 067K		5395	US	7 AUG	100.9	87.6	854	753		
1971 067L		5399	US	7 AUG	97.2	87.6	648	603		
1971 067M		5400	US	7 AUG	97.0	87.6	636	595		
1971 067N		5384	US	7 AUG	101.4	87.6	883	763		
1971 069C		5426	USSR	12 AUG	99.6	49.5	820	657		
1971 071A	EOLE 1	5435	FRANCE	16 AUG	99.7	50.1	839	652		
1971 071B		5438	US	16 AUG	99.6	50.1	834	649		
1971 071C		5440	US	16 AUG	96.7	50.7	652	553		
1971 073B		5449	USSR	2 SEP	SELENOCENTRIC ORBIT					
1971 080A	SHINSEI	5485	JAPAN	28 SEP	113.1	32.1	1866	873		
1971 080B		5498	JAPAN	28 SEP	111.9	32.0	1756	870		
1971 082A	LUNA 19	5488	USSR	28 SEP	SELENOCENTRIC ORBIT					
1971 082C		5490	USSR	28 SEP	SELENOCENTRIC ORBIT					
1971 086A	COSMOS 444	5547	USSR	13 OCT	114.1	74.0	1506	1319		
1971 086B	COSMOS 445	5548	USSR	13 OCT	114.4	74.0	1509	1348		
1971 086C	COSMOS 446	5549	USSR	13 OCT	114.8	74.0	1509	1379		
1971 086D	COSMOS 447	5550	USSR	13 OCT	115.1	74.0	1511	1409		
1971 086E	COSMOS 448	5551	USSR	13 OCT	115.5	74.0	1515	1438		
1971 086F	COSMOS 449	5552	USSR	13 OCT	116.2	74.0	1539	1481		
1971 086G	COSMOS 450	5553	USSR	13 OCT	115.8	74.0	1527	1459		
1971 086H	COSMOS 451	5554	USSR	13 OCT	116.6	74.0	1571	1487		
1971 086J		5555	USSR	13 OCT	117.3	74.0	1621	1501		
1971 087A		5557	US	14 OCT	101.1	99.2	851	773		
1971 087B		5556	US	14 OCT	101.3	99.1	868	775		
1971 089A		5560	US	17 OCT	99.8	92.7	763	739		
1971 093A	PROSPERO	5580	UK	28 OCT	104.5	82.1	1411	531		
1971 093B		5581	UK	28 OCT	104.6	82.0	1420	532		
1971 095A		5587	US	3 NOV	1436.2	12.8	35815	35761		
1971 095B		5588	US	3 NOV	1435.0	12.7	35775	35754		
1971 095C		5589	US	3 NOV	1481.7	13.4	37374	35975		
1971 096C		21859	US	15 NOV	119.9	3.7	3119	237		
1971 099A	COSMOS 457	5614	USSR	20 NOV	109.4	74.0	1216	1180		
1971 099B		5615	USSR	20 NOV	109.3	74.0	1209	1174		
1971 110A		5678	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110B		5679	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110C		5680	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110D		5681	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 110E		5682	US	14 DEC	ELEMENTS NOT AVAILABLE					
1971 111A	COSMOS 465	5683	USSR	15 DEC	104.8	74.0	1004	964		
1971 111B		5685	USSR	15 DEC	104.6	74.0	993	960		
1971 114A	COSMOS 468	5705	USSR	17 DEC	100.4	74.0	791	767		
1971 114B		5707	USSR	17 DEC	100.3	74.0	792	754		
1971 114C		5778	USSR	17 DEC	99.7	74.0	752	738		
1971 114D		5858	USSR	17 DEC	99.6	74.0	745	733		
1971 116A	INTELSAT 4 F-3	5709	ITSO	20 DEC	1445.6	9.7	36002	35941		
1971 117A	COSMOS 469	5721	USSR	25 DEC	104.6	64.5	1010	945		
1971 119A	OREOL 1	5729	USSR	27 DEC	109.2	74.0	1987	388		
1971 119B		5730	USSR	27 DEC	108.5	73.9	1927	385		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1971 LAUNCHES (CONT.)										
1971 120A	METEOR	5731	USSR	29 DEC	102.5	81.3	913	836		
1971 120B		5732	USSR	29 DEC	102.0	81.3	872	839		
1971 120C		8826	USSR	29 DEC	100.9	81.2	813	786		
1971 120D		8827	USSR	29 DEC	101.9	81.3	858	840		
1971 120F		15344	USSR	29 DEC	98.1	81.2	680	653		
1972 LAUNCHES										
1972 003A	INTELSAT 4 F-4	5775	ITSO	23 JAN	1442.6	9.1	35915	35912		
1972 003B		5816	US	23 JAN	653.0	28.1	36499	609		
1972 007B		5836	USSR	14 FEB	SELENOCENTRIC ORBIT					
1972 009A	COSMOS 475	5846	USSR	25 FEB	104.6	74.1	994	960		
1972 009B		5847	USSR	25 FEB	104.4	74.0	990	944		
1972 010A		5851	US	1 MAR	ELEMENTS NOT AVAILABLE					
1972 010B		5854	US	1 MAR	ELEMENTS NOT AVAILABLE					
1972 011B		5853	USSR	1 MAR	93.7	81.2	476	430		
1972 012A	PIONEER 10	5860	US	3 MAR	HELIOCENTRIC ORBIT					
1972 012B		5861	US	3 MAR	HELIOCENTRIC ORBIT					
1972 018A		5903	US	24 MAR	101.3	98.9	859	782		
1972 018B		5904	US	24 MAR	101.3	98.9	854	784		
1972 019A	COSMOS 480	5905	USSR	25 MAR	109.1	83.0	1198	1168		
1972 019B		5907	USSR	25 MAR	108.9	83.0	1192	1159		
1972 022A	METEOR	5917	USSR	30 MAR	102.3	81.2	877	855		
1972 022B		5918	USSR	30 MAR	102.5	81.2	917	832		
1972 023E		6073	USSR	31 MAR	158.8	52.2	6454	217		
1972 029A	PROGNOZ	5941	USSR	14 APR	CURRENT ELEMENTS NOT MAINTAINED					
1972 031C	LUNAR MODULE	6005	US	16 APR	SELENOCENTRIC ORBIT					9*
1972 035A	COSMOS 489	6019	USSR	6 MAY	104.7	74.0	996	960		
1972 035B		6020	USSR	6 MAY	104.5	74.0	985	954		
1972 041A	INTELSAT 4 F-5	6052	ITSO	13 JUN	1438.3	10.1	35856	35804		
1972 041B		6058	US	13 JUN	650.3	26.2	36475	493		
1972 043A	COSMOS 494	6059	USSR	23 JUN	100.4	74.1	787	771		
1972 043B		6061	USSR	23 JUN	100.2	74.1	783	752		
1972 043C		6063	USSR	23 JUN	99.4	74.0	736	723		
1972 043D		6065	USSR	23 JUN	99.7	74.1	757	731		
1972 049A	METEOR	6079	USSR	30 JUN	102.7	81.2	893	876		
1972 049B		6080	USSR	30 JUN	102.8	81.2	927	856		
1972 049C		20348	USSR	30 JUN	102.8	81.2	927	855		
1972 057A	COSMOS 504	6117	USSR	20 JUL	113.9	74.0	1494	1319		
1972 057B	COSMOS 505	6118	USSR	20 JUL	114.3	74.0	1494	1349		
1972 057C	COSMOS 506	6119	USSR	20 JUL	114.6	74.0	1494	1380		
1972 057D	COSMOS 507	6120	USSR	20 JUL	114.9	74.0	1494	1409		
1972 057E	COSMOS 508	6121	USSR	20 JUL	115.3	74.0	1494	1441		
1972 057F	COSMOS 509	6122	USSR	20 JUL	115.6	74.0	1496	1471		
1972 057G	COSMOS 510	6123	USSR	20 JUL	116.0	74.0	1507	1493		
1972 057H	COSMOS 511	6124	USSR	20 JUL	116.4	74.0	1543	1493		
1972 057J		6125	USSR	20 JUL	117.0	74.0	1599	1490		
1972 058A	LANDSAT 1	6126	US	23 JUL	103.0	99.3	908	896		
1972 058B - 058JL			US	23 JUL	SEE NOTE 17*					17*
1972 062A	COSMOS 514	6148	USSR	16 AUG	104.2	83.0	965	950		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1972 LAUNCHES (CONT.)										
1972 062B		6149	USSR	16 AUG	104.1	83.0	961	946		
1972 062C		6277	USSR	16 AUG	104.1	82.9	955	947		
1972 062D		7560	USSR	16 AUG	102.7	83.0	938	837		
1972 065A	COPERNICUS	6153	US	21 AUG	99.2	35.0	725	714		
1972 065B		6155	US	21 AUG	98.8	35.0	733	664		
1972 066A	COSMOS 516	6154	USSR	21 AUG	104.5	64.8	1012	932		
1972 069A	TRIAD OI-1X	6173	US	2 SEP	99.9	90.0	795	709		
1972 069B		6180	US	2 SEP	99.4	90.0	766	694		
1972 069C		6250	US	2 SEP	97.9	89.7	692	622		
1972 072A	COSMOS 520	6192	USSR	19 SEP	715.3	68.1	36447	3782		
1972 072E		6302	USSR	19 SEP	706.7	67.9	36048	3756		
1972 073A	EXPLORER 47	6197	US	23 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1972 074A	COSMOS 521	6206	USSR	29 SEP	104.9	65.8	994	985		
1972 074B		6207	USSR	29 SEP	104.7	65.8	1002	959		
1972 074C		6210	USSR	29 SEP	104.9	65.8	992	985		
1972 076A		6212	US	2 OCT	97.5	98.7	646	632		
1972 076B		6217	US	2 OCT	98.7	98.6	706	691		
1972 076C		6218	US	2 OCT	99.1	98.5	725	708		
1972 076D		6221	US	2 OCT	96.9	98.6	618	606		
1972 079C		6822	US	10 OCT	114.7	95.6	1462	1417		
1972 079D		6823	US	10 OCT	114.7	95.8	1484	1403		
1972 079E		6824	US	10 OCT	114.6	95.5	1442	1431		
1972 082A	NOAA 2	6235	US	15 OCT	114.9	101.9	1453	1446		
1972 082B	AMSAT-OSCAR 6	6236	US	15 OCT	114.9	101.9	1452	1446		
1972 082C		6237	US	15 OCT	109.2	102.8	1464	914		
1972 085A	METEOR	6256	USSR	26 OCT	102.3	81.2	879	853		
1972 085B		6257	USSR	26 OCT	102.4	81.3	915	830		
1972 087A	COSMOS 528	6262	USSR	1 NOV	114.1	74.0	1465	1364		
1972 087B	COSMOS 529	6264	USSR	1 NOV	114.5	74.0	1465	1400		
1972 087C	COSMOS 530	6265	USSR	1 NOV	113.7	74.0	1466	1330		
1972 087D	COSMOS 531	6266	USSR	1 NOV	114.7	74.0	1467	1418		
1972 087E	COSMOS 532	6267	USSR	1 NOV	113.4	74.0	1466	1297		
1972 087F	COSMOS 533	6268	USSR	1 NOV	113.6	74.0	1466	1314		
1972 087G	COSMOS 534	6269	USSR	1 NOV	113.9	74.0	1466	1346		
1972 087H	COSMOS 535	6270	USSR	1 NOV	114.3	74.0	1466	1381		
1972 087J		6271	USSR	1 NOV	116.6	74.0	1591	1465		
1972 089A		6275	US	9 NOV	101.2	98.7	842	786		
1972 089B		6276	US	9 NOV	101.4	98.8	853	799		
1972 090A	ANIK A1	6278	CANADA	10 NOV	1457.1	10.1	36258	36134		
1972 097A	NIMBUS 5	6305	US	11 DEC	107.1	99.8	1098	1086		
1972 097B		6306	US	11 DEC	111.7	99.8	1513	1099		
1972 101A		6317	US	20 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1972 101B		6318	US	20 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1972 102A	COSMOS 539	6319	USSR	21 DEC	112.9	74.0	1377	1339		
1972 102B		6320	USSR	21 DEC	112.7	74.0	1371	1333		
1972 104A	COSMOS 540	6323	USSR	25 DEC	100.4	74.1	791	763		
1972 104B		6324	USSR	25 DEC	100.0	74.1	767	753		
1972 104C		6391	USSR	25 DEC	98.8	74.1	709	694		
1972 104D		6396	USSR	25 DEC	98.7	74.0	705	688		
1973 LAUNCHES										

OBJECTS IN ORBIT

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1973 005A	COSMOS 546	6350	USSR	26 JAN	95.7	50.7	567	539		
1973 009A	PROGNOZ 3	6364	USSR	15 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1973 013A		6380	US	6 MAR	ELEMENTS NOT AVAILABLE					
1973 015A	METEOR	6392	USSR	20 MAR	102.4	81.2	878	861		
1973 015B		6393	USSR	20 MAR	102.5	81.3	921	834		
1973 019A	PIONEER 11	6421	US	6 APR	HELIOCENTRIC ORBIT					
1973 019B		6425	US	6 APR	HELIOCENTRIC ORBIT					
1973 023A	ANIK A2	6437	CANADA	20 APR	1443.0	8.9	35954	35889		
1973 034A	METEOR	6659	USSR	29 MAY	102.2	81.2	880	843		
1973 034B		6660	USSR	29 MAY	102.5	81.2	910	840		
1973 037A	COSMOS 564	6675	USSR	8 JUN	114.6	74.0	1478	1392		
1973 037B	COSMOS 565	6676	USSR	8 JUN	115.3	74.0	1487	1446		
1973 037C	COSMOS 566	6677	USSR	8 JUN	115.0	74.0	1481	1430		
1973 037D	COSMOS 567	6678	USSR	8 JUN	114.8	74.0	1481	1410		
1973 037E	COSMOS 568	6679	USSR	8 JUN	114.4	74.0	1478	1373		
1973 037F	COSMOS 569	6680	USSR	8 JUN	114.1	74.0	1478	1355		
1973 037G	COSMOS 570	6681	USSR	8 JUN	113.9	74.0	1479	1335		
1973 037H	COSMOS 571	6682	USSR	8 JUN	113.7	74.0	1477	1316		
1973 037J		6683	USSR	8 JUN	116.8	74.0	1593	1482		
1973 039A	EXPLORER 49	6686	US	10 JUN	SELENOCENTRIC ORBIT					
1973 039D		6689	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1973 039F		6725	US	10 JUN	SELENOCENTRIC ORBIT					
1973 039G		6726	US	10 JUN	SELENOCENTRIC ORBIT					
1973 040A		6691	US	12 JUN	ELEMENTS NOT AVAILABLE					
1973 040B		11940	US	12 JUN	ELEMENTS NOT AVAILABLE					
1973 042A	COSMOS 574	6707	USSR	20 JUN	104.9	82.9	1008	975		
1973 042B		6708	USSR	20 JUN	104.8	82.9	995	976		
1973 047A	MARS 4	6742	USSR	21 JUL	HELIOCENTRIC ORBIT					
1973 049A	MARS 5	6754	USSR	25 JUL	AREOCENTRIC ORBIT					
1973 052A	MARS 6	6768	USSR	5 AUG	AREOCENTRIC ORBIT					
1973 053A	MARS 7	6776	USSR	9 AUG	HELIOCENTRIC ORBIT					
1973 053D	CAPSULE	7224	USSR	9 AUG	HELIOCENTRIC ORBIT					
1973 054A		6787	US	17 AUG	100.9	98.8	821	780		
1973 054B		6788	US	17 AUG	101.1	98.9	831	789		
1973 056A		6791	US	21 AUG	ELEMENTS NOT AVAILABLE					
1973 056B		6792	US	21 AUG	ELEMENTS NOT AVAILABLE					
1973 058A	INTELSAT 4 F-7	6796	ITSO	23 AUG	1452.5	9.1	36135	36076		
1973 058B		6797	US	23 AUG	652.0	27.8	36497	557		
1973 064A	COSMOS 585	6825	USSR	8 SEP	113.5	74.0	1402	1372		
1973 064B		6826	USSR	8 SEP	113.4	74.0	1402	1358		
1973 065A	COSMOS 586	6828	USSR	14 SEP	104.7	82.9	1001	959		
1973 065B		6829	USSR	14 SEP	104.6	82.9	992	956		
1973 069A	COSMOS 588	6845	USSR	2 OCT	115.3	74.0	1491	1446		
1973 069B	COSMOS 589	6846	USSR	2 OCT	114.9	74.0	1486	1413		
1973 069C	COSMOS 590	6847	USSR	2 OCT	115.1	74.0	1485	1431		
1973 069D	COSMOS 591	6848	USSR	2 OCT	114.1	74.0	1484	1344		
1973 069E	COSMOS 592	6849	USSR	2 OCT	113.9	74.0	1482	1328		
1973 069F	COSMOS 593	6850	USSR	2 OCT	114.3	74.0	1483	1361		
1973 069G	COSMOS 594	6851	USSR	2 OCT	114.5	74.0	1484	1378		
1973 069H	COSMOS 595	6852	USSR	2 OCT	114.7	74.0	1483	1396		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1973 LAUNCHES (CONT.)										
1973 069J		6853	USSR	2 OCT	117.1	74.0	1620	1482		
1973 078A	EXPLORER 50	6893	US	26 OCT	ELEMENTS NOT AVAILABLE					
1973 078C		6895	US	26 OCT	97.7	28.8	970	328		
1973 078D		6896	US	26 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1973 080B		6908	USSR	29 OCT	92.0	81.2	384	362		
1973 081A	NNSS 30200	6909	US	30 OCT	105.2	89.8	1125	884		
1973 081B		6910	US	30 OCT	105.3	89.8	1126	887		
1973 081C		15764	US	30 OCT	105.8	90.5	1172	888		
1973 084A	COSMOS 606	6916	USSR	2 NOV	718.6	68.6	37146	3249		
1973 084D		6939	USSR	2 NOV	706.6	67.7	36989	2810		
1973 085A	MARINER 10	6919	US	3 NOV	HELIOCENTRIC ORBIT					
1973 086A	NOAA 3	6920	US	6 NOV	116.1	102.2	1509	1497		
1973 086B - 086HF			US	6 NOV	SEE NOTE		18*			18*
1973 088D		6938	US	10 NOV	114.5	96.9	1453	1413		
1973 088E		7559	US	10 NOV	114.6	96.8	1475	1401		
1973 098A	COSMOS 614	6965	USSR	4 DEC	100.2	74.1	787	752		
1973 098B		6966	USSR	4 DEC	100.1	74.1	778	745		
1973 098C		6967	USSR	4 DEC	98.4	74.1	694	674		
1973 098D		9569	USSR	4 DEC	99.5	74.1	744	721		
1973 100A		6973	US	13 DEC	1474.6	12.7	36673	36400		
1973 100B		6974	US	13 DEC	1436.2	12.4	35797	35779		
1973 100D		6976	US	13 DEC	1515.0	13.3	38521	36113		
1973 104A	COSMOS 617	6985	USSR	19 DEC	113.9	74.0	1482	1331		
1973 104B	COSMOS 618	6986	USSR	19 DEC	115.2	74.0	1485	1441		
1973 104C	COSMOS 619	6987	USSR	19 DEC	115.0	74.0	1485	1421		
1973 104D	COSMOS 620	6988	USSR	19 DEC	115.4	74.0	1492	1456		
1973 104E	COSMOS 621	6989	USSR	19 DEC	114.7	74.0	1482	1404		
1973 104F	COSMOS 622	6990	USSR	19 DEC	114.3	74.0	1482	1367		
1973 104G	COSMOS 623	6991	USSR	19 DEC	114.5	74.0	1482	1385		
1973 104H	COSMOS 624	6992	USSR	19 DEC	114.1	74.0	1483	1348		
1973 104J		6993	USSR	19 DEC	117.0	74.0	1619	1473		
1973 107A	OREOL 2	7003	USSR	26 DEC	103.7	74.0	1481	386		
1973 107B		7004	USSR	26 DEC	103.1	74.0	1428	379		
1973 108A	COSMOS 626	7005	USSR	27 DEC	103.9	65.4	993	897		
1973 109A	COSMOS 627	7008	USSR	29 DEC	104.9	83.0	1012	965		
1973 109B		7009	USSR	29 DEC	104.6	83.0	990	959		
1974 LAUNCHES										
1974 001A	COSMOS 628	7094	USSR	17 JAN	104.7	83.0	1008	950		
1974 001B		7095	USSR	17 JAN	104.5	82.9	999	941		
1974 011A	METEOR	7209	USSR	5 MAR	101.9	81.2	877	821		
1974 011B		7210	USSR	5 MAR	102.0	81.2	910	792		
1974 013A	UK-X4	7213	UK	9 MAR	100.3	97.8	868	679		
1974 013B		7228	US	9 MAR	100.4	97.8	864	688		
1974 015A		7218	US	16 MAR	100.9	99.1	846	758		
1974 015B		7219	US	16 MAR	101.2	99.0	863	766		
1974 017A	COSMOS 637	7229	USSR	26 MAR	1428.8	12.5	35774	35513		
1974 017F		11567	USSR	26 MAR	1425.7	12.5	35762	35402		
1974 020B		7244	US	10 APR	ELEMENTS NOT AVAILABLE					

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1974 LAUNCHES (CONT.)										
1974 022A	WESTAR 1	7250	US	13 APR	1441.6	8.5	35903	35883		
1974 024A	COSMOS 641	7265	USSR	23 APR	114.5	74.0	1479	1385		
1974 024B	COSMOS 642	7266	USSR	23 APR	113.7	74.0	1477	1317		
1974 024C	COSMOS 643	7267	USSR	23 APR	114.1	74.0	1479	1350		
1974 024D	COSMOS 644	7268	USSR	23 APR	113.9	74.0	1479	1333		
1974 024E	COSMOS 645	7269	USSR	23 APR	114.3	74.0	1480	1366		
1974 024F	COSMOS 646	7270	USSR	23 APR	114.7	74.0	1482	1401		
1974 024G	COSMOS 647	7271	USSR	23 APR	114.9	74.0	1481	1420		
1974 024H	COSMOS 648	7272	USSR	23 APR	115.1	74.0	1487	1435		
1974 024J		7273	USSR	23 APR	117.0	74.0	1605	1485		
1974 025A	METEOR	7274	USSR	24 APR	102.3	81.2	882	852		
1974 025B		7275	USSR	24 APR	102.4	81.2	913	831		
1974 026A	MOLNIYA 2-9	7276	USSR	25 APR	633.9	62.3	35408	725		
1974 026E		7373	USSR	26 APR	699.2	62.4	38942	493		
1974 028A	COSMOS 650	7281	USSR	29 APR	113.4	74.0	1398	1366		
1974 028B		7284	USSR	29 APR	113.2	74.0	1386	1361		
1974 029A	COSMOS 651	7291	USSR	15 MAY	103.4	65.0	956	881		
1974 032A	COSMOS 654	7297	USSR	17 MAY	104.4	64.9	1014	917		
1974 033A	SMS 1	7298	US	17 MAY	1460.3	14.4	36314	36203		
1974 037A	LUNA 22	7315	USSR	29 MAY	SELENOCENTRIC ORBIT					
1974 039A	ATS 6	7318	US	30 MAY	1412.1	12.0	35460	35169		
1974 039C		7324	US	30 MAY	1430.6	12.3	35789	35569		
1974 044A	COSMOS 660	7337	USSR	18 JUN	104.6	83.0	1565	384		
1974 044B		7338	USSR	18 JUN	101.9	83.0	1314	385		
1974 048A	COSMOS 663	7349	USSR	27 JUN	104.7	82.9	997	961		
1974 048B		7350	USSR	27 JUN	104.5	82.9	984	960		
1974 050C		7354	USSR	29 JUN	682.6	62.5	38557	46		
1974 052A	METEOR	7363	USSR	9 JUL	102.9	81.2	907	883		
1974 052B		7364	USSR	9 JUL	102.5	81.2	908	843		
1974 054A		7369	US	14 JUL	468.7	125.2	13772	13447		
1974 054C		8599	US	14 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1974 056A	MOLNIYA 2-10	7376	USSR	23 JUL	717.9	61.8	39601	756		
1974 056D		7382	USSR	23 JUL	731.9	61.8	40193	856		
1974 060A	MOLNIYA 1-S	7392	USSR	29 JUL	1436.0	12.9	35833	35736		
1974 060F		20836	USSR	29 JUL	1434.8	12.9	35852	35669		
1974 063A		7411	US	9 AUG	101.2	98.8	846	780		
1974 063B		7412	US	9 AUG	101.3	98.8	855	786		
1974 066B		7418	USSR	16 AUG	94.1	81.2	494	459		
1974 066C		8424	USSR	16 AUG	91.2	81.2	337	325		
1974 069A	COSMOS 675	7424	USSR	29 AUG	113.6	74.1	1421	1361		
1974 069B		7426	USSR	29 AUG	113.5	74.1	1421	1350		
1974 071A	COSMOS 676	7433	USSR	11 SEP	100.7	74.0	800	779		
1974 071B		7434	USSR	11 SEP	100.5	74.0	796	764		
1974 071C		8756	USSR	11 SEP	99.6	74.1	745	734		
1974 071D		8829	USSR	11 SEP	100.2	74.1	782	754		
1974 072A	COSMOS 677	7435	USSR	19 SEP	114.4	74.0	1464	1395		
1974 072B	COSMOS 678	7436	USSR	19 SEP	115.9	74.0	1530	1464		
1974 072C	COSMOS 679	7437	USSR	19 SEP	115.7	74.0	1508	1464		
1974 072D	COSMOS 680	7438	USSR	19 SEP	115.5	74.0	1488	1465		
1974 072E	COSMOS 681	7439	USSR	19 SEP	115.3	74.0	1469	1464		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1974 LAUNCHES (CONT.)										
1974 072F	COSMOS 682	7440	USSR	19 SEP	115.0	74.0	1464	1450		
1974 072G	COSMOS 683	7441	USSR	19 SEP	114.8	74.0	1464	1432		
1974 072H	COSMOS 684	7442	USSR	19 SEP	114.6	74.0	1464	1414		
1974 072J		7443	USSR	19 SEP	117.7	74.0	1682	1473		
1974 075A	WESTAR 2	7466	US	10 OCT	1442.2	8.3	35927	35883		
1974 075C		7468	US	10 OCT	188.9	24.3	8862	195		
1974 079A	COSMOS 689	7476	USSR	13 OCT	104.9	82.9	1012	970		
1974 079B		7477	USSR	18 OCT	104.8	82.9	1009	960		
1974 083A	METEOR	7490	USSR	28 OCT	102.2	81.2	889	835		
1974 083B		7493	USSR	28 OCT	102.3	81.2	903	834		
1974 083C		15521	USSR	28 OCT	102.3	81.2	901	832		
1974 089A	NOAA 4	7529	US	15 NOV	114.9	101.8	1457	1442		
1974 089B	AMSAT-OSCAR 7	7530	US	15 NOV	114.8	101.8	1456	1438		
1974 089C	INTASAT	7531	SPAIN	15 NOV	114.8	101.8	1457	1439		
1974 089D - 089FF			US	15 NOV	SEE NOTE		19*			19*
1974 092E		7546	USSR	21 NOV	733.3	64.5	40785	330		
1974 093A	INTELSAT 4 F-8	7544	ITSO	21 NOV	1443.1	7.5	35951	35896		
1974 093B		7545	US	21 NOV	652.5	26.2	36469	615		
1974 094A	SKYNET 2B	7547	UK	23 NOV	1435.3	11.1	35795	35745		
1974 097A	HELIOS 1	7567	FRG	10 DEC	HELIOCENTRIC ORBIT					
1974 097B		7568	US	10 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1974 097C		7569	US	10 DEC	HELIOCENTRIC ORBIT					
1974 097D		7570	FRG	10 DEC	HELIOCENTRIC ORBIT					
1974 099A	METEOR	7574	USSR	17 DEC	102.1	81.2	869	845		
1974 099B		7575	USSR	17 DEC	102.1	81.2	897	818		
1974 101A	SYMPHONIE-A	7578	FR/FRG	19 DEC	1440.8	11.3	36047	35708		
1974 101G		9330	US	19 DEC	653.6	12.4	36761	380		
1974 102D		7586	USSR	21 DEC	438.5	62.0	25389	92		
1974 105A	COSMOS 700	7593	USSR	26 DEC	104.6	83.0	993	957		
1974 105B		7594	USSR	26 DEC	104.5	83.0	980	958		
1975 LAUNCHES										
1975 004A	LANDSAT 2	7615	US	22 JAN	103.1	98.8	912	898		
1975 004B - 004HR			US	22 JAN	SEE NOTE		20*			20*
1975 007A	COSMOS 706	7625	USSR	30 JAN	718.4	67.7	34367	6019		
1975 007D		7629	USSR	30 JAN	716.8	67.6	35116	5192		
1975 010A	STARLETTE	7646	FRANCE	6 FEB	104.2	49.8	1108	805		
1975 010B		7647	FRANCE	6 FEB	104.3	49.8	1126	801		
1975 010C		7654	FRANCE	6 FEB	103.6	49.9	1064	796		
1975 010D		7655	FRANCE	6 FEB	103.7	49.8	1071	795		
1975 010E		7659	FRANCE	6 FEB	103.8	49.8	1085	793		
1975 011A	SMS 2	7648	US	6 FEB	1447.1	10.8	36073	35929		
1975 011F		20835	US	6 FEB	1460.7	12.5	36657	35875		
1975 012A	COSMOS 708	7663	USSR	12 FEB	113.5	69.2	1408	1366		
1975 012B		7665	USSR	12 FEB	113.3	69.2	1397	1362		
1975 016A	COSMOS 711	7678	USSR	28 FEB	115.4	74.0	1491	1459		
1975 016B	COSMOS 712	7679	USSR	28 FEB	114.9	74.0	1487	1409		
1975 016C	COSMOS 713	7680	USSR	28 FEB	114.6	74.0	1485	1393		
1975 016D	COSMOS 714	7681	USSR	28 FEB	115.2	74.0	1489	1442		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1975 LAUNCHES (CONT.)										
1975 016E	COSMOS 715	7682	USSR	28 FEB	115.7	74.0	1502	1467		
1975 016F	COSMOS 716	7683	USSR	28 FEB	115.9	74.0	1511	1477		
1975 016G	COSMOS 717	7684	USSR	28 FEB	116.1	74.0	1533	1478		
1975 016H	COSMOS 718	7685	USSR	28 FEB	115.0	74.0	1487	1427		
1975 016J		7686	USSR	28 FEB	117.9	74.0	1718	1457		
1975 017A		7687	US	10 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1975 017B		7688	US	10 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1975 023A	METEOR	7714	USSR	1 APR	102.3	81.2	882	854		
1975 023B		7715	USSR	1 APR	102.4	81.2	910	833		
1975 024A	COSMOS 723	7718	USSR	2 APR	103.6	64.7	971	890		
1975 025A	COSMOS 724	7727	USSR	7 APR	103.0	65.6	934	861		
1975 027A	GEOS 3	7734	US	9 APR	101.6	115.0	840	827		
1975 027B		7735	US	9 APR	101.3	115.0	836	800		
1975 027C		10728	US	9 APR	101.4	115.2	865	786		
1975 027E		10730	US	9 APR	103.5	115.0	1017	832		
1975 028A	COSMOS 726	7736	USSR	11 APR	104.5	83.0	988	951		
1975 028B		7737	USSR	11 APR	104.4	83.0	977	950		
1975 029D		7741	USSR	14 APR	726.6	62.3	40651	139		
1975 034A	COSMOS 729	7768	USSR	22 APR	104.8	83.0	1005	969		
1975 034B		7769	USSR	22 APR	104.7	83.0	996	968		
1975 036A	MOLNIYA 1-29	7780	USSR	29 APR	717.6	62.0	39705	642		
1975 036D		7800	USSR	29 APR	732.0	62.7	40605	450		
1975 038A	ANIK A3	7790	CANADA	7 MAY	1439.5	7.6	35864	35843		
1975 038D		7794	US	7 MAY	393.2	24.3	22544	255		
1975 042A	INTELSAT 4 F-1	7815	ITSO	22 MAY	1450.7	7.4	36132	36012		
1975 042B		7902	US	22 MAY	653.1	25.4	36480	631		
1975 043A		7816	US	24 MAY	ELEMENTS NOT AVAILABLE					
1975 043B		7817	US	24 MAY	ELEMENTS NOT AVAILABLE					
1975 045A	COSMOS 732	7820	USSR	28 MAY	114.6	74.0	1468	1402		
1975 045B	COSMOS 733	7822	USSR	28 MAY	116.2	74.0	1552	1467		
1975 045C	COSMOS 734	7823	USSR	28 MAY	115.0	74.0	1469	1441		
1975 045D	COSMOS 735	7824	USSR	28 MAY	115.2	74.0	1472	1459		
1975 045E	COSMOS 736	7825	USSR	28 MAY	115.5	74.0	1484	1468		
1975 045F	COSMOS 737	7826	USSR	28 MAY	115.9	74.0	1527	1468		
1975 045G	COSMOS 738	7827	USSR	28 MAY	115.7	74.0	1506	1467		
1975 045H	COSMOS 739	7828	USSR	28 MAY	114.8	74.0	1470	1420		
1975 045J		7831	USSR	28 MAY	117.9	74.0	1693	1483		
1975 049B	SRET 2	7910	FRANCE	5 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1975 050A	VENERA 9	7915	USSR	8 JUN	CIRCUM-VENEREAN ORBIT					
1975 051C	SSU 1	7937	US	8 JUN	113.5	95.1	1394	1382		
1975 051D		7938	US	8 JUN	113.2	95.0	1401	1343		
1975 051E		7939	US	8 JUN	113.9	95.2	1424	1382		
1975 052A	NIMBUS 6	7924	US	12 JUN	107.4	99.7	1111	1098		
1975 052B		7946	US	12 JUN	111.7	99.8	1549	1057		
1975 052B - 052JS			US	12 JUN	SEE NOTE 56*					56*
1975 052D		21268	US	12 JUN	110.4	99.8	1397	1088		
1975 052E		21269	US	12 JUN	109.0	99.7	1270	1086		
1975 052F		21270	US	12 JUN	115.2	99.4	1833	1092		
1975 052G		21271	US	12 JUN	110.8	99.6	1464	1062		
1975 052H		21272	US	12 JUN	106.4	99.4	1093	1024		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1975 LAUNCHES (CONT.)										
1975 052J		21273	US	12 JUN	107.7	99.7	1146	1092		
1975 052K		21274	US	12 JUN	103.2	99.0	1048	768		
1975 052L		21275	US	12 JUN	106.6	99.4	1096	1044		
1975 052M		21276	US	12 JUN	107.9	99.7	1162	1092		
1975 052N		21277	US	12 JUN	109.3	99.7	1295	1092		
1975 054A	VENERA 10	7947	USSR	14 JUN	HELIOCENTRIC ORBIT					
1975 055A		7963	US	18 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1975 055B		7964	US	18 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1975 056B		7969	USSR	20 JUN	94.4	81.2	509	470		
1975 063A	MOLNIYA 2-13	8015	USSR	8 JUL	719.0	62.0	39790	626		
1975 063D		8018	USSR	8 JUL	732.6	62.6	40635	447		
1975 064A	METEOR 2	8026	USSR	11 JUL	102.2	81.3	877	845		
1975 064B		8027	USSR	11 JUL	102.4	81.3	909	830		
1975 064C		8039	USSR	11 JUL	102.2	81.3	875	852		
1975 064D		8110	USSR	11 JUL	102.1	81.3	881	834		
1975 072A	COS-B	8062	ESA	9 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1975 072B		8063	US	9 AUG	120.9	89.2	3124	319		
1975 074A	COSMOS 755	8072	USSR	14 AUG	104.8	82.9	1005	964		
1975 074B		8073	USSR	14 AUG	104.7	82.9	993	964		
1975 075A	VIKING ORBITER 1	8108	US	20 AUG	AREOCENTRIC ORBIT					
1975 075B		8111	US	20 AUG	HELIOCENTRIC ORBIT					
1975 076A	COSMOS 756	8127	USSR	22 AUG	92.3	81.2	390	384		
1975 076B		8128	USSR	22 AUG	95.0	81.2	545	490		
1975 077A	SYMPHONIE-B	8132	FR/FRG	27 AUG	1440.3	11.6	35884	35855		
1975 077B		8133	US	27 AUG	103.0	25.3	1401	398		
1975 077C		8134	US	27 AUG	638.5	13.5	35971	399		
1975 081A	MOLNIYA 2-14	8195	USSR	9 SEP	717.4	61.8	39646	691		
1975 081D		8418	USSR	9 SEP	732.6	62.4	40650	431		
1975 082A	KIKU	8197	JAPAN	9 SEP	106.0	47.0	1103	975		
1975 082B		8352	JAPAN	9 SEP	105.9	47.0	1100	973		
1975 083A	VIKING ORBITER 2	8199	US	9 SEP	AREOCENTRIC ORBIT					
1975 083B		8272	US	9 SEP	HELIOCENTRIC ORBIT					
1975 086A	COSMOS 761	8285	USSR	17 SEP	114.6	74.0	1480	1397		
1975 086B	COSMOS 762	8286	USSR	17 SEP	115.1	74.0	1482	1436		
1975 086C	COSMOS 763	8287	USSR	17 SEP	115.8	74.0	1508	1471		
1975 086D	COSMOS 764	8288	USSR	17 SEP	116.0	74.0	1524	1476		
1975 086E	COSMOS 765	8289	USSR	17 SEP	116.3	74.0	1548	1476		
1975 086F	COSMOS 766	8290	USSR	17 SEP	114.9	74.0	1482	1416		
1975 086G	COSMOS 767	8291	USSR	17 SEP	115.3	74.0	1484	1453		
1975 086H	COSMOS 768	8292	USSR	17 SEP	115.5	74.0	1489	1468		
1975 086J		8295	USSR	17 SEP	117.8	74.0	1681	1480		
1975 087A	METEOR	8293	USSR	18 SEP	102.0	81.3	910	800		
1975 087B		8294	USSR	18 SEP	102.3	81.3	910	819		
1975 089A	COSMOS 770	8325	USSR	24 SEP	109.1	83.0	1206	1161		
1975 089B		8326	USSR	24 SEP	108.9	83.0	1197	1158		
1975 091A	INTELSAT 4A F-1	8330	ITSO	26 SEP	1441.1	7.4	35921	35847		
1975 091B		8331	US	26 SEP	652.4	21.9	36524	552		
1975 094A	COSMOS 773	8343	USSR	30 SEP	100.5	74.1	790	773		
1975 094B		8344	USSR	30 SEP	100.3	74.1	788	755		
1975 094C		8346	USSR	30 SEP	98.4	74.0	688	671		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1975 LAUNCHES (CONT.)										
1975 094D		14865	USSR	30 SEP	99.9	74.0	759	750		
1975 097A	COSMOS 775	8357	USSR	8 OCT	1436.8	12.5	35846	35754		
1975 097F		11676	USSR	8 OCT	1438.3	12.5	35933	35726		
1975 100A	GOES 1	8366	US	16 OCT	1436.7	11.1	35814	35783		
1975 100C		8368	US	16 OCT	146.4	23.4	5394	250		
1975 100F		20962	US	16 OCT	1412.5	11.8	36495	34152		
1975 103A	COSMOS 778	8419	USSR	4 NOV	104.8	83.0	999	966		
1975 103B		8421	USSR	4 NOV	104.6	83.0	994	957		
1975 105A	MOLNIYA 3-3	8425	USSR	14 NOV	717.8	62.0	39679	673		
1975 105D		8462	USSR	14 NOV	733.4	62.6	40659	460		
1975 112A	COSMOS 783	8458	USSR	28 NOV	100.6	74.1	797	780		
1975 112B		8459	USSR	28 NOV	100.4	74.1	790	767		
1975 112C		8757	USSR	28 NOV	99.4	74.0	731	726		
1975 112D		14801	USSR	28 NOV	100.3	74.1	778	763		
1975 112E		18500	USSR	28 NOV	100.4	74.1	792	766		
1975 115A	COSMOS 785	8473	USSR	12 DEC	104.2	65.1	1024	887		
1975 117A	RCA SATCOM I	8476	US	13 DEC	1445.9	7.6	36089	35866		
1975 118A		8482	US	14 DEC	ELEMENTS NOT AVAILABLE					
1975 118C		8516	US	14 DEC	ELEMENTS NOT AVAILABLE					
1975 118D		8517	US	14 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1975 121A	MOLNIYA 2-15	8492	USSR	17 DEC	416.9	62.8	24113	103		
1975 122A	PROGNOZ 4	8510	USSR	22 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1975 123A	RADUGA 1	8513	USSR	22 DEC	1435.8	12.2	35805	35756		
1975 123D		8546	USSR	22 DEC	380.6	46.3	21631	405		
1975 123E		8547	USSR	22 DEC	316.2	46.6	17813	176		
1975 123F		11568	USSR	22 DEC	1432.8	12.2	35783	35658		
1975 124A	METEOR	8519	USSR	25 DEC	102.1	81.2	877	840		
1975 124B		8520	USSR	25 DEC	102.2	81.3	901	828		
1976 LAUNCHES										
1976 003A	HELIOS 2	8582	FRG	15 JAN	HELIOCENTRIC ORBIT					
1976 003B		8583	US	15 JAN	HELIOCENTRIC ORBIT					
1976 003C		8584	US	15 JAN	HELIOCENTRIC ORBIT					
1976 004A	CTS	8585	CANADA	17 JAN	1436.2	11.6	35863	35712		
1976 005A	COSMOS 789	8591	USSR	20 JAN	104.9	83.0	1011	964		
1976 005B		8597	USSR	20 JAN	104.7	83.0	1000	962		
1976 006A	MOLNIYA 1-32	8601	USSR	22 JAN	720.2	62.8	39955	520		
1976 006D		8701	USSR	22 JAN	695.2	62.5	38611	624		
1976 008A	COSMOS 791	8607	USSR	28 JAN	114.7	74.1	1484	1399		
1976 008B	COSMOS 792	8608	USSR	28 JAN	115.1	74.1	1489	1433		
1976 008C	COSMOS 793	8609	USSR	28 JAN	114.9	74.1	1488	1415		
1976 008D	COSMOS 794	8610	USSR	28 JAN	115.3	74.1	1492	1449		
1976 008E	COSMOS 795	8611	USSR	28 JAN	115.6	74.1	1496	1465		
1976 008F	COSMOS 796	8612	USSR	28 JAN	115.8	74.1	1513	1470		
1976 008G	COSMOS 797	8613	USSR	28 JAN	116.0	74.1	1527	1477		
1976 008H	COSMOS 798	8614	USSR	28 JAN	116.3	74.1	1552	1476		
1976 008J		8615	USSR	28 JAN	117.9	74.1	1693	1481		
1976 010A	INTELSAT 4A F-2	8620	ITSO	29 JAN	1444.5	7.6	35983	35919		
1976 010B		8621	US	29 JAN	653.8	21.6	36550	599		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 011A	COSMOS 800	8645	USSR	3 FEB	104.9	83.0	1008	975		
1976 011B		8646	USSR	3 FEB	104.8	83.0	990	980		
1976 014A	COSMOS 803	8688	USSR	12 FEB	95.3	65.8	554	513		
1976 017A	MARISAT 1	8697	US	19 FEB	1436.0	9.7	35804	35768		
1976 017C		8702	US	19 FEB	157.5	24.4	6316	251		
1976 019A	UME	8709	JAPAN	29 FEB	105.0	69.7	1002	989		
1976 019B		8710	JAPAN	29 FEB	105.1	69.7	1007	991		
1976 022A	COSMOS 807	8744	USSR	12 MAR	104.9	82.9	1596	385		
1976 022B		8745	USSR	12 MAR	101.6	82.9	1304	367		
1976 023A	LES 8	8746	US	15 MAR	1436.1	18.3	35841	35729		
1976 023B	LES 9	8747	US	15 MAR	1436.2	18.3	35893	35685		
1976 023C	SOLRAD 11A	8748	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023D	SOLRAD 11B	8749	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023F		8751	US	15 MAR	1465.5	18.8	37009	35710		
1976 023G		8752	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023H		8753	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023J		8832	US	15 MAR	CURRENT ELEMENTS NOT MAINTAINED					
1976 023K		13753	US	15 MAR	1420.9	10.2	35492	35484		
1976 024A	COSMOS 808	8754	USSR	16 MAR	93.3	81.2	437	431		
1976 024B		8755	USSR	16 MAR	94.1	81.2	492	453		
1976 029A	RCA SATCOM II	8774	US	26 MAR	1460.1	7.2	36502	36008		
1976 032A	METEOR	8799	USSR	7 APR	102.0	81.3	881	829		
1976 032B		8800	USSR	7 APR	102.2	81.3	931	791		
1976 035A	NATO III-A	8808	NATO	22 APR	1437.1	9.5	35846	35767		
1976 038A		8818	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038B		8819	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038C	SSU-1	8835	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038D	SSU-2	8836	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038E		8839	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038F		8842	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038G		8843	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038H		8859	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038J	SSU-3	8884	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038K		9796	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 038L		9996	US	30 APR	ELEMENTS NOT AVAILABLE					
1976 039A	LAGEOS	8820	US	4 MAY	225.4	109.8	5945	5838		
1976 039C		8822	US	4 MAY	225.4	109.7	5947	5831		
1976 039D		14514	US	4 MAY	103.5	109.9	1577	269		
1976 041A	MOLNIYA 3-5	8833	USSR	12 MAY	664.3	62.0	37590	93		
1976 041D		8844	USSR	12 MAY	710.5	61.9	39885	111		
1976 042A	COMSTAR 1	8838	US	13 MAY	1442.6	7.4	35931	35897		
1976 042B		8840	US	13 MAY	648.2	21.0	36213	652		
1976 043A	METEOR	8845	USSR	15 MAY	102.0	81.3	885	825		
1976 043B		8846	USSR	15 MAY	102.3	81.2	906	824		
1976 047A	P 76-5	8860	US	22 MAY	105.4	99.6	1045	982		
1976 047B		8861	US	22 MAY	105.5	99.5	1047	984		
1976 047C		8867	US	22 MAY	106.3	99.2	1110	998		
1976 047D		8868	US	22 MAY	104.6	100.0	1012	934		
1976 050A		8871	US	2 JUN	ELEMENTS NOT AVAILABLE					
1976 050B		8872	US	2 JUN	ELEMENTS NOT AVAILABLE					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 051A	COSMOS 823	8873	USSR	2 JUN	104.9	83.0	1005	969		
1976 051B		8874	USSR	2 JUN	104.7	83.0	1001	963		
1976 053A	MARISAT 2	8882	US	10 JUN	1436.1	8.9	35797	35775		
1976 053F		8910	US	10 JUN	472.3	25.3	27155	267		
1976 054A	COSMOS 825	8889	USSR	15 JUN	114.6	74.0	1484	1393		
1976 054B	COSMOS 826	8890	USSR	15 JUN	116.2	74.0	1542	1480		
1976 054C	COSMOS 827	8891	USSR	15 JUN	114.9	74.0	1488	1410		
1976 054D	COSMOS 828	8892	USSR	15 JUN	115.1	74.0	1487	1430		
1976 054E	COSMOS 829	8893	USSR	15 JUN	115.3	74.0	1488	1448		
1976 054F	COSMOS 830	8894	USSR	15 JUN	115.5	74.0	1491	1465		
1976 054G	COSMOS 831	8895	USSR	15 JUN	115.7	74.0	1505	1472		
1976 054H	COSMOS 832	8896	USSR	15 JUN	116.0	74.0	1518	1480		
1976 054J		8897	USSR	15 JUN	117.9	74.0	1685	1486		
1976 059A		8916	US	26 JUN	ELEMENTS NOT AVAILABLE					
1976 059C		8918	US	26 JUN	ELEMENTS NOT AVAILABLE					
1976 059D		8919	US	26 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1976 061A	COSMOS 836	8923	USSR	29 JUN	100.6	74.0	801	774		
1976 061B		8924	USSR	29 JUN	100.4	74.1	789	768		
1976 061C		9572	USSR	29 JUN	99.2	74.1	724	715		
1976 061D		14815	USSR	29 JUN	99.4	74.1	740	718		
1976 065C		9008	US	8 JUL	ELEMENTS NOT AVAILABLE					
1976 066A	PALAPA 1	9009	INDNSA	8 JUL	1439.0	7.2	35868	35818		
1976 066C		9017	US	8 JUL	320.7	24.4	18030	251		
1976 067A	COSMOS 839	9011	USSR	8 JUL	115.6	65.9	2059	909		
1976 067B - 067BY			USSR	3 JUL	SEE NOTE 21*					21*
1976 069A	COSMOS 841	9022	USSR	15 JUL	100.4	74.0	789	770		
1976 069B		9023	USSR	15 JUL	100.3	74.0	784	758		
1976 069C		9704	USSR	15 JUL	99.4	74.1	733	725		
1976 069D		13499	USSR	15 JUL	100.4	74.1	791	759		
1976 070A	COSMOS 842	9025	USSR	21 JUL	104.8	83.0	1004	964		
1976 070B		9044	USSR	21 JUL	104.6	83.0	988	966		
1976 073A	COMSTAR 2	9047	US	22 JUL	1436.0	7.2	35790	35782		
1976 073B		9329	US	22 JUL	645.7	21.7	36131	606		
1976 077A	NOAA 5	9057	US	29 JUL	116.2	102.0	1519	1504		
1976 077B - 077FR			US	29 JUL	SEE NOTE 22*					22*
1976 077FD		18591	US	29 JUL	136.7	101.6	3441	1381		
1976 078A	COSMOS 846	9061	USSR	29 JUL	104.6	82.9	1006	946		
1976 078B		9062	USSR	29 JUL	104.5	82.9	991	947		
1976 080A		9270	US	6 AUG	ELEMENTS NOT AVAILABLE					
1976 080B		9271	US	6 AUG	ELEMENTS NOT AVAILABLE					
1976 091A	DMSP-F1	9415	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091B		9419	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091C		9420	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091F		9484	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 091G		9518	US	11 SEP	ELEMENTS NOT AVAILABLE					
1976 092A	RADUGA 2	9416	USSR	11 SEP	1436.4	11.9	35895	35689		
1976 092F		17872	USSR	11 SEP	1436.6	11.9	35864	35726		
1976 098A	COSMOS 858	9443	USSR	29 SEP	100.6	74.0	795	774		
1976 098B		9444	USSR	29 SEP	100.4	74.1	786	766		
1976 098C		14816	USSR	29 SEP	100.3	74.0	787	758		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1976 LAUNCHES (CONT.)										
1976 098D		14817	USSR	29 SEP	99.4	74.1	740	716		
1976 098E		18504	USSR	29 SEP	99.7	74.1	759	728		
1976 101A	MARISAT 3	9478	US	14 OCT	1436.1	10.3	35800	35774		
1976 102A	METEOR	9481	USSR	15 OCT	102.2	81.3	887	837		
1976 102B		9482	USSR	15 OCT	102.3	81.3	912	826		
1976 103A	COSMOS 860	9486	USSR	17 OCT	104.3	64.7	1016	902		
1976 103F		19297	USSR	17 OCT	100.4	64.6	800	759		
1976 104A	COSMOS 861	9494	USSR	21 OCT	104.2	64.9	1002	914		
1976 105A	COSMOS 862	9495	USSR	22 OCT	717.3	65.7	39090	1240		
1976 105B - 105P			USSR	22 OCT	SEE NOTE 23*					23*
1976 107A	EKRAN	9503	USSR	26 OCT	1436.7	11.9	36086	35511		
1976 107F		11569	USSR	26 OCT	1419.3	11.7	35506	35407		
1976 108A	COSMOS 864	9509	USSR	29 OCT	104.7	82.9	1003	957		
1976 108B		9510	USSR	29 OCT	104.6	82.9	994	953		
1976 112A	PROGNOZ 5	9557	USSR	25 NOV	CURRENT ELEMENTS NOT MAINTAINED					
1976 118A	COSMOS 871	9588	USSR	7 DEC	114.6	74.0	1462	1415		
1976 118B	COSMOS 872	9589	USSR	7 DEC	114.4	74.0	1462	1396		
1976 118C	COSMOS 873	9590	USSR	7 DEC	115.5	74.0	1494	1461		
1976 118D	COSMOS 874	9591	USSR	7 DEC	115.7	74.0	1514	1461		
1976 118E	COSMOS 875	9592	USSR	7 DEC	114.8	74.0	1462	1434		
1976 118F	COSMOS 876	9593	USSR	7 DEC	116.0	74.0	1536	1462		
1976 118G	COSMOS 877	9594	USSR	7 DEC	115.0	74.0	1462	1452		
1976 118H	COSMOS 878	9595	USSR	7 DEC	115.3	74.0	1473	1461		
1976 118J		9598	USSR	7 DEC	117.6	74.0	1682	1463		
1976 120B - 120C			USSR	9 DEC	SEE NOTE 24*					24*
1976 122A	COSMOS 883	9610	USSR	15 DEC	104.7	83.0	1003	953		
1976 122B		9613	USSR	15 DEC	104.6	83.0	995	951		
1976 126A	COSMOS 886	9634	USSR	27 DEC	114.7	65.8	2301	583		
1976 126B - 126CG			USSR	27 DEC	SEE NOTE 25*					25*
1976 128A	COSMOS 887	9637	USSR	28 DEC	104.6	82.9	1009	945		
1976 128B		9638	USSR	28 DEC	104.5	82.9	993	948		
1977 LAUNCHES										
1977 002A	METEOR 2-2	9661	USSR	6 JAN	102.7	81.3	893	876		
1977 002B		9662	USSR	6 JAN	102.8	81.3	929	853		
1977 002C		9663	USSR	6 JAN	102.7	81.3	891	879		
1977 002D		9664	USSR	6 JAN	102.7	81.3	895	880		
1977 004A	COSMOS 890	9737	USSR	20 JAN	105.0	83.0	1014	973		
1977 004B		9738	USSR	20 JAN	104.8	83.0	999	973		
1977 005A	NATO III-B	9785	NATO	28 JAN	1436.2	9.3	35803	35773		
1977 005B		9786	US	28 JAN	103.8	28.0	1253	618		
1977 005D		9809	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 005E		9810	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 005F		9811	US	28 JAN	CURRENT ELEMENTS NOT MAINTAINED					
1977 007A		9803	US	6 FEB	ELEMENTS NOT AVAILABLE					
1977 007C		9855	US	6 FEB	ELEMENTS NOT AVAILABLE					
1977 007D		9856	US	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1977 010A	MOLNIYA 2-17	9829	USSR	11 FEB	717.6	62.9	39952	392		
1977 010E		9850	USSR	11 FEB	730.9	63.6	40336	664		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 012A	TANSEI 3	9841	JAPAN	19 FEB	134.1	65.7	3807	794		
1977 012C		9843	JAPAN	19 FEB	134.1	65.7	3803	793		
1977 012E		9981	JAPAN	19 FEB	133.3	65.2	3744	786		
1977 012F		9982	JAPAN	19 FEB	133.5	65.9	3763	786		
1977 012G		9983	JAPAN	19 FEB	134.1	65.6	3794	807		
1977 012H		12857	JAPAN	19 FEB	134.0	66.3	3784	804		
1977 012J		13133	JAPAN	19 FEB	133.0	65.8	3708	797		
1977 012L		19314	JAPAN	19 FEB	133.3	65.4	3897	633		
1977 013A	COSMOS 894	9846	USSR	21 FEB	104.8	82.9	1008	961		
1977 013B		9848	USSR	21 FEB	104.7	83.0	993	966		
1977 014A	KIKU 2	9852	JAPAN	23 FEB	1439.9	10.6	35911	35812		
1977 015B		9854	USSR	26 FEB	94.4	81.2	513	462		
1977 018A	PALAPA 2	9862	INDONSA	10 MAR	1439.6	6.2	35875	35835		
1977 021A	MOLNIYA 1-36	9880	USSR	24 MAR	717.3	62.9	39981	351		
1977 021D		9927	USSR	24 MAR	732.8	63.5	40548	545		
1977 024A	METEOR	9903	USSR	5 APR	102.3	81.3	889	843		
1977 024B		9904	USSR	5 APR	102.4	81.3	911	831		
1977 024C		9907	USSR	5 APR	102.6	82.9	899	860		
1977 027A	COSMOS 903	9911	USSR	11 APR	718.3	67.4	37723	2655		
1977 027D		9921	USSR	11 APR	724.0	67.7	38050	2609		
1977 027E		10946	USSR	11 APR	CURRENT ELEMENTS NOT MAINTAINED					
1977 029A	ESA-GEOS	9931	ESA	20 APR	734.1	26.0	38516	2641		
1977 032A	MOLNIYA 3-7	9941	USSR	28 APR	717.5	62.9	39990	349		
1977 034A		10000	US	12 MAY	1489.6	11.0	36906	36747		
1977 034B		10001	US	12 MAY	1509.1	10.6	37356	37049		
1977 034C		10002	US	12 MAY	1506.9	11.2	38431	35892		
1977 036A	COSMOS 909	10010	USSR	19 MAY	117.0	65.9	2110	982		
1977 036B		10011	USSR	19 MAY	116.9	65.9	2099	980		
1977 036C		10013	USSR	19 MAY	117.0	65.9	2109	982		
1977 038A		10016	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 038B		10017	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 038C		15422	US	23 MAY	ELEMENTS NOT AVAILABLE					
1977 039A	COSMOS 911	10019	USSR	25 MAY	104.7	82.9	997	962		
1977 039B		10020	USSR	25 MAY	104.5	82.9	994	949		
1977 041A	INTELSAT 4A F-4	10024	ITSO	26 MAY	1448.0	6.4	36069	35968		
1977 041B		10025	US	26 MAY	647.9	21.9	36254	596		
1977 044A	DMSP-F2	10033	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044B		10034	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044C		10037	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 044D		10085	US	5 JUN	ELEMENTS NOT AVAILABLE					
1977 047A	COSMOS 917	10059	USSR	16 JUN	716.9	67.6	35043	5265		
1977 047D		10089	USSR	16 JUN	722.4	67.4	36082	4497		
1977 048A	GOES 2	10061	US	16 JUN	1436.2	9.6	35801	35774		
1977 048B		10062	US	16 JUN	108.3	28.4	1724	574		
1977 048F		10409	US	16 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1977 048G		20799	US	16 JUN	1431.7	10.8	36589	34811		
1977 053A		10091	US	23 JUN	718.1	64.1	20301	20067		
1977 053B		10960	US	23 JUN	314.4	64.3	16959	915		
1977 054A	MOLNIYA 1-37	10092	USSR	24 JUN	701.1	62.7	39377	150		
1977 054D		10155	USSR	24 JUN	694.9	63.2	38883	335		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 055A	COSMOS 921	10095	USSR	24 JUN	97.1	75.8	653	589		
1977 055B		10096	USSR	24 JUN	97.2	75.8	658	589		
1977 057A	METEOR	10113	USSR	29 JUN	93.0	97.4	434	413		
1977 057B		10114	USSR	29 JUN	96.3	97.9	593	573		
1977 059A	COSMOS 923	10120	USSR	1 JUL	100.7	74.0	801	781		
1977 059B		10121	USSR	1 JUL	100.5	74.0	796	767		
1977 059C		14802	USSR	1 JUL	100.0	74.1	770	748		
1977 059D		14818	USSR	1 JUL	99.6	74.1	749	731		
1977 061A	COSMOS 925	10134	USSR	7 JUL	92.9	81.2	420	413		
1977 061B		10135	USSR	7 JUL	94.5	81.2	515	473		
1977 062A	COSMOS 926	10137	USSR	8 JUL	104.9	82.9	1015	966		
1977 062B		10138	USSR	8 JUL	104.8	82.9	1002	970		
1977 064A	COSMOS 928	10141	USSR	13 JUL	104.6	83.0	1005	946		
1977 064B		10142	USSR	13 JUL	104.5	83.0	1001	937		
1977 065A	HIMAWARI	10143	JAPAN	14 JUL	1451.0	9.8	36156	35997		
1977 065B - 065C			US	14 JUL	SEE NOTE 26*					26*
1977 068A	COSMOS 931	10150	USSR	20 JUL	717.2	66.7	35589	4735		
1977 068D		10167	USSR	20 JUL	710.2	68.2	35235	4743		
1977 068E		12906	USSR	20 JUL	717.6	67.7	34579	5765		
1977 068F		12996	USSR	20 JUL	704.4	61.8	38095	1596		
1977 068G		14000	USSR	20 JUL	718.6	65.7	36856	3540		
1977 068J		19881	USSR	20 JUL	666.3	59.9	37436	346		
1977 071A	RADUGA 3	10159	USSR	23 JUL	1436.4	11.5	35836	35747		
1977 071F		11570	USSR	23 JUL	1473.3	11.9	36556	36468		
1977 076A	VOYAGER 2	10271	US	20 AUG	SOLAR SYSTEM ESCAPE TRAJECTORY					
1977 076B		10272	US	20 AUG	HELIOCENTRIC ORBIT					
1977 076C		10273	US	20 AUG	HELIOCENTRIC ORBIT					
1977 079A	COSMOS 939	10282	USSR	24 AUG	114.8	74.0	1460	1429		
1977 079B	COSMOS 940	10286	USSR	24 AUG	114.4	74.0	1460	1391		
1977 079C	COSMOS 941	10287	USSR	24 AUG	114.6	74.0	1460	1410		
1977 079D	COSMOS 942	10288	USSR	24 AUG	115.9	74.0	1530	1460		
1977 079E	COSMOS 943	10289	USSR	24 AUG	115.0	74.0	1460	1448		
1977 079F	COSMOS 944	10290	USSR	24 AUG	115.2	74.0	1469	1459		
1977 079G	COSMOS 945	10291	USSR	24 AUG	115.4	74.0	1489	1459		
1977 079H	COSMOS 946	10292	USSR	24 AUG	115.6	74.0	1509	1459		
1977 079J		10293	USSR	24 AUG	117.5	74.0	1675	1460		
1977 080A	SIRIO	10294	ITALY	25 AUG	1414.6	8.1	35745	34985		
1977 080B		10295	US	25 AUG	115.5	27.1	2082	875		
1977 082A	MOLNIYA 1-38	10315	USSR	30 AUG	682.1	62.6	37981	595		
1977 082E		10369	USSR	30 AUG	634.4	63.9	35919	238		
1977 084A	VOYAGER 1	10321	US	5 SEP	HELIOCENTRIC ORBIT					
1977 084B		10322	US	5 SEP	HELIOCENTRIC ORBIT					
1977 084C		10323	US	5 SEP	HELIOCENTRIC ORBIT					
1977 087A	COSMOS 951	10352	USSR	13 SEP	104.8	83.0	1009	959		
1977 087B		10355	USSR	13 SEP	104.7	83.0	1003	955		
1977 088A	COSMOS 952	10358	USSR	16 SEP	104.1	64.9	981	921		
1977 091A	COSMOS 955	10362	USSR	20 SEP	94.9	81.2	520	510		
1977 091B		10363	USSR	20 SEP	95.2	81.2	551	501		
1977 092A	EKRAN	10365	USSR	20 SEP	1436.7	11.5	35965	35631		
1977 092G		11571	USSR	20 SEP	1421.8	11.3	35564	35449		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1977 LAUNCHES (CONT.)										
1977 093A	PROGNOZ 6	10370	USSR	22 SEP	CURRENT ELEMENTS NOT MAINTAINED					
1977 102D		10425	US	22 OCT	CURRENT ELEMENTS NOT MAINTAINED					
1977 105A	MOLNIYA 3-8	10455	USSR	28 OCT	717.7	63.3	39580	770		
1977 105E		10485	USSR	28 OCT	731.6	63.5	39788	1245		
1977 106A	NNSS 30110	10457	US	28 OCT	106.8	89.7	1098	1059		
1977 106B		10462	US	28 OCT	106.8	89.7	1099	1060		
1977 106C		12858	US	28 OCT	106.9	89.5	1096	1065		
1977 107A	COSMOS 962	10459	USSR	28 OCT	104.7	82.9	1004	960		
1977 107B		10461	USSR	28 OCT	104.6	82.9	1000	950		
1977 108A	METEOSAT 1	10489	ESA	23 NOV	1434.7	10.7	35786	35732		
1977 108B		10490	US	23 NOV	115.2	28.3	2438	490		
1977 109A	COSMOS 963	10491	USSR	24 NOV	109.2	82.9	1205	1175		
1977 109B		10492	USSR	24 NOV	109.1	82.9	1199	1170		
1977 112A		10502	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112B		10504	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112C		10528	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112D		10529	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112E		10544	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112F		10594	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112G		10595	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 112H		12859	US	8 DEC	ELEMENTS NOT AVAILABLE					
1977 114A		10508	US	11 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1977 114B		10509	US	11 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1977 116A	COSMOS 967	10512	USSR	13 DEC	104.7	65.8	1003	958		
1977 116B		10513	USSR	13 DEC	104.5	65.8	998	944		
1977 116C		10518	USSR	13 DEC	104.6	65.8	998	955		
1977 116D		10526	USSR	13 DEC	104.7	65.8	1006	957		
1977 117A	METEOR 2-3	10514	USSR	14 DEC	102.2	81.2	874	848		
1977 117B		10515	USSR	14 DEC	102.3	81.2	896	834		
1977 117C		14950	USSR	14 DEC	102.3	81.2	898	833		
1977 118A	SAKURA	10516	JAPAN	15 DEC	1455.9	9.1	36180	36163		
1977 118B		10517	US	15 DEC	109.3	28.7	1901	483		
1977 118C		10519	US	15 DEC	109.7	29.1	1884	542		
1977 119A	COSMOS 968	10520	USSR	16 DEC	100.4	74.0	790	766		
1977 119B		10521	USSR	16 DEC	100.2	74.0	783	752		
1977 119C		10524	USSR	16 DEC	99.9	74.0	767	739		
1977 119D		10525	USSR	16 DEC	99.9	74.0	770	741		
1977 119E		18512	USSR	16 DEC	99.7	74.0	754	736		
1977 121A	COSMOS 970	10531	USSR	21 DEC	105.9	65.9	1137	934		
1977 121B - 121BY			USSR	21 DEC	SEE NOTE 27*					27*
1977 122A	COSMOS 971	10536	USSR	23 DEC	104.9	82.9	1002	972		
1977 122B		10537	USSR	23 DEC	104.7	82.9	995	965		
1977 123A	COSMOS 972	10539	USSR	27 DEC	103.7	75.8	1157	710		
1977 123B		10541	USSR	27 DEC	103.7	75.8	1153	712		
1978 LAUNCHES										
1978 002A	INTELSAT 4A F-3	10557	ITSO	7 JAN	1441.3	5.8	35907	35869		
1978 002B		10722	US	17 JAN	650.2	21.8	36310	654		
1978 004A	COSMOS 975	10561	USSR	10 JAN	95.3	81.2	536	525		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 004B		10582	USSR	10 JAN	95.9	81.2	590	529		
1978 005A	COSMOS 976	10581	USSR	10 JAN	115.0	74.0	1462	1453		
1978 005B	COSMOS 977	10584	USSR	10 JAN	114.4	74.0	1461	1398		
1978 005C	COSMOS 978	10585	USSR	10 JAN	114.6	74.0	1462	1416		
1978 005D	COSMOS 979	10586	USSR	10 JAN	114.8	74.0	1461	1435		
1978 005E	COSMOS 980	10587	USSR	10 JAN	115.3	74.0	1473	1461		
1978 005F	COSMOS 981	10588	USSR	10 JAN	115.5	74.0	1493	1462		
1978 005G	COSMOS 982	10589	USSR	10 JAN	115.7	74.0	1513	1461		
1978 005H	COSMOS 983	10590	USSR	10 JAN	116.0	74.0	1535	1461		
1978 005J		10591	USSR	10 JAN	117.7	74.0	1691	1461		
1978 007A	COSMOS 985	10599	USSR	17 JAN	104.6	82.9	1013	937		
1978 007B		10600	USSR	17 JAN	104.5	82.9	1005	935		
1978 012A	IUE	10637	US	26 JAN	1436.2	33.2	41471	30108		
1978 012C		10723	US	26 JAN	551.7	29.6	31546	262		
1978 014A	KYOKKO	10664	JAPAN	4 FEB	134.0	65.4	3953	639		
1978 014C		12329	JAPAN	4 FEB	133.7	65.3	3934	635		
1978 014D		12330	JAPAN	4 FEB	134.0	65.4	3953	634		
1978 014E		12331	JAPAN	4 FEB	132.5	64.8	3816	642		
1978 014F		12406	JAPAN	4 FEB	133.1	65.9	3867	642		
1978 016A	FLTSATCOM 1	10669	US	9 FEB	1436.3	9.9	35807	35772		
1978 016C		12908	US	9 FEB	199.6	26.3	9632	236		
1978 018A	UME 2	10674	JAPAN	16 FEB	107.2	69.4	1217	973		
1978 018B		10675	JAPAN	16 FEB	107.1	69.4	1212	973		
1978 018C		13132	JAPAN	16 FEB	107.9	69.2	1288	968		
1978 019A	COSMOS 990	10676	USSR	17 FEB	100.4	74.0	791	765		
1978 019B		10677	USSR	17 FEB	100.2	74.0	780	757		
1978 019C		14803	USSR	17 FEB	99.2	74.0	726	718		
1978 019D		13500	USSR	17 FEB	100.0	74.1	765	746		
1978 019E		18501	USSR	17 FEB	100.0	74.1	770	747		
1978 020A		10684	US	22 FEB	727.0	64.2	20583	20225		
1978 020B		10801	US	22 FEB	268.4	64.0	13965	842		
1978 021A		10688	US	25 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1978 021B		10689	US	25 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1978 022A	COSMOS 991	10692	USSR	28 FEB	104.6	83.0	1004	949		
1978 022B		10693	USSR	28 FEB	104.5	83.0	988	958		
1978 024D		10803	USSR	2 MAR	728.8	62.0	40499	398		
1978 026A	LANDSAT 3	10702	US	5 MAR	103.1	98.8	916	895		
1978 026B	AMSAT-OSCAR-8	10703	US	5 MAR	103.0	99.1	904	893		
1978 026C - 026HT			US	5 MAR	SEE NOTE 28*					28*
1978 028A	COSMOS 994	10731	USSR	15 MAR	104.9	82.9	1006	969		
1978 028B		10732	USSR	15 MAR	104.7	82.9	995	965		
1978 029B		10734	US	16 MAR	ELEMENTS NOT AVAILABLE					
1978 031A	COSMOS 996	10744	USSR	28 MAR	104.6	82.9	1004	947		
1978 031B		10745	USSR	28 MAR	104.5	82.9	996	943		
1978 034A	COSMOS 1000	10776	USSR	31 MAR	104.7	82.9	1006	954		
1978 034B		10777	USSR	31 MAR	104.6	82.9	994	953		
1978 035A	INTELSAT 4A F-6	10778	ITSO	31 MAR	1436.3	5.8	35821	35760		
1978 035B		10779	US	31 MAR	647.9	21.9	36216	631		
1978 038A		10787	US	7 APR	CURRENT ELEMENTS NOT MAINTAINED					
1978 038B		10788	US	7 APR	CURRENT ELEMENTS NOT MAINTAINED					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 039A	YURI	10792	JAPAN	7 APR	1436.2	10.4	35837	35740		
1978 039B		10793	US	7 APR	110.9	28.2	1964	573		
1978 039C		10794	US	7 APR	181.4	26.9	8249	223		
1978 042A		10820	US	1 MAY	100.8	98.7	800	787		
1978 044A	OTS-2	10855	ESA	11 MAY	1452.5	7.9	36302	35911		
1978 044B		10856	US	11 MAY	139.9	27.9	3527	1572		
1978 044C		10857	US	11 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1978 045A	COSMOS 1005	10860	USSR	12 MAY	94.8	81.2	512	504		
1978 045B		10861	USSR	12 MAY	96.0	81.2	595	539		
1978 047A		10893	US	13 MAY	714.2	64.0	20617	19559		
1978 047B		10894	US	13 MAY	286.7	64.2	15106	942		
1978 051A	PIONEER VENUS ORBITER	10911	US	20 MAY	ELEMENTS NOT AVAILABLE					
1978 051B		10912	US	20 MAY	HELIOCENTRIC ORBIT					
1978 053A	COSMOS 1011	10917	USSR	23 MAY	104.7	82.9	1006	954		
1978 053B		10918	USSR	23 MAY	104.6	82.9	995	953		
1978 055A	MOLNIYA 1-40	10925	USSR	2 JUN	717.6	63.2	39357	987		
1978 055E		10949	USSR	2 JUN	732.5	63.4	39580	1496		
1978 056A	COSMOS 1013	10930	USSR	7 JUN	116.3	74.0	1552	1476		
1978 056B	COSMOS 1014	10931	USSR	7 JUN	116.1	74.0	1528	1477		
1978 056C	COSMOS 1015	10932	USSR	7 JUN	115.8	74.0	1514	1471		
1978 056D	COSMOS 1016	10933	USSR	7 JUN	115.6	74.0	1496	1468		
1978 056E	COSMOS 1017	10934	USSR	7 JUN	115.4	74.0	1490	1455		
1978 056F	COSMOS 1018	10935	USSR	7 JUN	115.2	74.0	1486	1440		
1978 056G	COSMOS 1019	10936	USSR	7 JUN	115.0	74.0	1485	1422		
1978 056H	COSMOS 1020	10937	USSR	7 JUN	114.8	74.0	1482	1405		
1978 056J		10938	USSR	7 JUN	117.8	74.0	1690	1478		
1978 058A		10941	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1978 058B		10942	US	10 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1978 062A	GOES 3	10953	US	16 JUN	1436.1	8.5	35805	35768		
1978 062B		10954	US	16 JUN	107.4	28.4	1654	554		
1978 062D		20801	US	16 JUN	1451.1	10.7	40024	32135		
1978 063A	COSMOS 1023	10961	USSR	21 JUN	100.4	74.1	787	766		
1978 063B		10962	USSR	21 JUN	100.2	74.1	786	748		
1978 063C		14804	USSR	21 JUN	98.5	74.0	697	679		
1978 063D		13497	USSR	21 JUN	100.3	74.1	783	757		
1978 064A	SEASAT 1	10967	US	27 JUN	100.1	108.0	766	761		
1978 066A	COSMOS 1024	10970	USSR	28 JUN	717.6	68.9	34715	5631		
1978 066D		10998	USSR	28 JUN	720.1	67.4	34983	5486		
1978 067A	COSMOS 1025	10973	USSR	28 JUN	96.0	82.5	573	557		
1978 067B		10974	USSR	28 JUN	97.2	82.5	638	609		
1978 068A	COMSTAR 3	10975	US	29 JUN	1451.8	5.7	36183	36002		
1978 068B		10976	US	29 JUN	648.8	21.4	36212	680		
1978 071A	ESA GEOS 2	10981	ESA	14 JUL	1449.1	10.6	36055	36024		
1978 071C		10983	US	14 JUL	415.5	25.8	23883	250		
1978 072D		11073	USSR	14 JUL	533.4	61.6	30641	173		
1978 073A	RADUGA 4	10987	USSR	18 JUL	1435.7	11.0	35817	35740		
1978 073D		11074	USSR	18 JUL	565.5	46.7	31817	733		
1978 073E		11941	USSR	18 JUL	1475.9	11.4	36633	36491		
1978 074A	COSMOS 1027	10991	USSR	27 JUL	104.6	82.9	997	955		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 074B		10992	USSR	27 JUL	104.5	82.9	987	957		
1978 075A		10993	US	5 AUG	ELEMENTS NOT AVAILABLE					
1978 075B		10994	US	5 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1978 078C		11003	US	8 AUG	HELIOCENTRIC ORBIT					
1978 079A	ICE	11004	US	12 AUG	HELIOCENTRIC ORBIT					
1978 079C		11006	US	12 AUG	CURRENT ELEMENTS NOT MAINTAINED					
1978 079D		13413	US	12 AUG	ELEMENTS NOT AVAILABLE					
1978 080A	MOLNIYA 1-42	11007	USSR	22 AUG	716.1	63.1	40009	262		
1978 080D		11075	USSR	22 AUG	732.2	63.7	40602	463		
1978 083A	COSMOS 1030	11015	USSR	6 SEP	717.2	66.8	35826	4497		
1978 083D		11076	USSR	6 SEP	723.6	66.0	36934	3708		
1978 083E		12907	USSR	6 SEP	711.4	64.0	36813	3227		
1978 083F		12919	USSR	6 SEP	719.5	64.0	37421	3020		
1978 083G		13959	USSR	6 SEP	721.7	63.7	37601	2948		
1978 084A	VENERA 11	11020	USSR	9 SEP	HELIOCENTRIC ORBIT					
1978 086A	VENERA 12	11025	USSR	14 SEP	HELIOCENTRIC ORBIT					
1978 087A	JIKI'KEN	11027	JAPAN	16 SEP	380.3	31.2	21751	270		
1978 087D		11028	JAPAN	16 SEP	331.1	31.3	18725	223		
1978 091A	COSMOS 1034	11042	USSR	4 OCT	114.9	74.0	1479	1419		
1978 091B	COSMOS 1035	11044	USSR	4 OCT	114.6	74.0	1478	1400		
1978 091C	COSMOS 1036	11045	USSR	4 OCT	115.1	74.0	1479	1439		
1978 091D	COSMOS 1037	11046	USSR	4 OCT	115.3	74.0	1479	1459		
1978 091E	COSMOS 1038	11047	USSR	4 OCT	115.5	74.0	1484	1475		
1978 091F	COSMOS 1039	11048	USSR	4 OCT	116.3	74.0	1550	1476		
1978 091G	COSMOS 1040	11049	USSR	4 OCT	116.0	74.0	1525	1477		
1978 091H	COSMOS 1041	11050	USSR	4 OCT	115.8	74.0	1506	1475		
1978 091J		11051	USSR	4 OCT	117.9	74.0	1697	1480		
1978 093A		11054	US	7 OCT	717.9	63.6	20350	20011		
1978 094A	COSMOS 1043	11055	USSR	10 OCT	94.0	81.2	478	466		
1978 094B		11056	USSR	10 OCT	95.1	81.2	554	495		
1978 095A	MOLNIYA 3-10	11057	USSR	13 OCT	717.4	63.0	39300	1037		
1978 095E		11079	USSR	13 OCT	734.3	63.1	39890	1273		
1978 096A	TIROS-N	11060	US	13 OCT	101.7	98.8	847	828		
1978 096B		11061	US	13 OCT	100.1	98.8	767	763		
1978 096C		11062	US	13 OCT	100.1	98.8	766	760		
1978 098A	NIMBUS 7	11080	US	24 OCT	103.8	99.1	949	930		
1978 098B	CAMEO	11081	US	24 OCT	104.0	99.6	966	924		
1978 100A	COSMOS 1045	11084	USSR	26 OCT	120.3	82.5	1703	1682		
1978 100B	RADIO 1	11085	USSR	26 OCT	120.3	82.5	1705	1683		
1978 100C	RADIO 2	11086	USSR	26 OCT	120.3	82.5	1703	1682		
1978 100D	100AY		USSR	26 OCT	SEE NOTE 29*					29*
1978 105A	COSMOS 1048	11111	USSR	16 NOV	100.5	74.0	797	769		
1978 105B		11112	USSR	16 NOV	100.4	74.0	804	751		
1978 105C		11113	USSR	16 NOV	99.9	74.0	761	742		
1978 105D		11114	USSR	16 NOV	99.6	74.0	750	731		
1978 106A	NATO III-C	11115	NATO	19 NOV	1436.1	6.2	35799	35775		
1978 109A	COSMOS 1051	11128	USSR	5 DEC	114.6	74.0	1484	1392		
1978 109B	COSMOS 1052	11129	USSR	5 DEC	114.8	74.0	1486	1408		
1978 109C	COSMOS 1053	11130	USSR	5 DEC	115.0	74.0	1485	1428		
1978 109D	COSMOS 1054	11131	USSR	5 DEC	115.2	74.0	1486	1445		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1978 LAUNCHES (CONT.)										
1978 109E	COSMOS 1055	11132	USSR	5 DEC	115.4	74.0	1488	1463		
1978 109F	COSMOS 1056	11133	USSR	5 DEC	115.7	74.0	1502	1469		
1978 109G	COSMOS 1057	11134	USSR	5 DEC	115.9	74.0	1514	1478		
1978 109H	COSMOS 1058	11135	USSR	5 DEC	116.1	74.0	1536	1478		
1978 109J		11136	USSR	5 DEC	118.1	74.0	1698	1489		
1978 112A		11141	US	11 DEC	746.5	64.2	21016	20745		
1978 112B		11142	US	11 DEC	269.5	63.6	14324	559		
1978 113A		11144	US	14 DEC	1436.1	8.5	35804	35767		
1978 113B		11145	US	14 DEC	1436.1	8.4	35805	35768		
1978 113D		11147	US	14 DEC	1339.2	3.9	35596	32137		
1978 116A	ANIK B1	11153	CANADA	16 DEC	1442.7	5.2	35939	35891		
1978 117A	COSMOS 1063	11155	USSR	19 DEC	95.3	81.2	534	528		
1978 117B		11156	USSR	19 DEC	95.4	81.2	568	507		
1978 118A	GORIZONT 1	11158	USSR	19 DEC	1436.7	21.0	49429	22166		
1978 118C		11926	USSR	19 DEC	1417.4	20.8	48779	22058		
1978 121A	COSMOS 1066	11165	USSR	23 DEC	102.0	81.2	891	819		
1978 121B		11166	USSR	23 DEC	101.9	81.2	897	800		
1978 121C		19643	USSR	23 DEC	101.9	81.2	894	799		
1978 122A	COSMOS 1067	11168	USSR	26 DEC	109.0	83.0	1208	1156		
1978 122B		11170	USSR	26 DEC	108.9	83.0	1194	1156		
1979 LAUNCHES										
1979 003A	COSMOS 1072	11238	USSR	16 JAN	104.8	82.9	1011	957		
1979 003B		11239	USSR	16 JAN	104.7	82.9	1009	949		
1979 004A	MOLNIYA 3-11	11240	USSR	18 JAN	717.5	63.7	39435	908		
1979 004D		11553	USSR	18 JAN	733.0	64.1	39732	1368		
1979 005A	METEOR 1-29	11251	USSR	25 JAN	96.2	97.7	601	552		
1979 005B		11252	USSR	25 JAN	94.9	97.4	521	504		
1979 007A	SCATHA	11256	US	30 JAN	1418.4	8.7	42634	28243		
1979 009A	AYAME 1	11261	JAPAN	6 FEB	1312.8	2.0	37404	29269		
1979 011A	COSMOS 1076	11266	USSR	12 FEB	95.4	82.5	545	528		
1979 011B		11267	USSR	12 FEB	97.1	82.5	635	605		
1979 012A	COSMOS 1077	11268	USSR	13 FEB	94.7	81.2	508	502		
1979 012B		11269	USSR	13 FEB	95.2	81.2	560	494		
1979 015A	EKRAN 3	11273	USSR	21 FEB	1436.6	10.7	35951	35640		
1979 015D		13900	USSR	21 FEB	1421.1	10.6	35539	35444		
1979 017A	SOLWIND	11278	US	24 FEB	91.3	97.8	341	332		
1979 017B -	017LZ		US	24 FEB	SEE NOTE		30*			30*
1979 020A	INTERCOSMOS 19	11285	USSR	27 FEB	96.6	74.0	737	457		
1979 020B		11286	USSR	27 FEB	96.8	74.0	755	456		
1979 021A	METEOR 2-4	11288	USSR	1 MAR	102.0	81.2	872	836		
1979 021B		11289	USSR	1 MAR	102.1	81.2	912	799		
1979 021C		11290	USSR	1 MAR	102.1	81.2	880	835		
1979 021D		14632	USSR	1 MAR	102.8	81.3	930	854		
1979 024A	COSMOS 1081	11296	USSR	15 MAR	114.5	74.0	1463	1402		
1979 024B	COSMOS 1082	11297	USSR	15 MAR	114.7	74.0	1463	1421		
1979 024C	COSMOS 1083	11298	USSR	15 MAR	114.9	74.0	1463	1440		
1979 024D	COSMOS 1084	11299	USSR	15 MAR	115.1	74.0	1462	1459		
1979 024E	COSMOS 1085	11300	USSR	15 MAR	115.6	74.0	1501	1463		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1979 LAUNCHES (CONT.)										
1979 024F	COSMOS 1086	11301	USSR	15 MAR	115.4	74.0	1480	1463		
1979 024G	COSMOS 1087	11302	USSR	15 MAR	115.8	74.0	1521	1464		
1979 024H	COSMOS 1088	11303	USSR	15 MAR	116.1	74.0	1544	1464		
1979 024J		11304	USSR	15 MAR	117.6	74.0	1688	1458		
1979 025B		11306	US	16 MAR	ELEMENTS NOT AVAILABLE					
1979 026A	COSMOS 1089	11308	USSR	21 MAR	104.7	83.0	997	964		
1979 026B		11309	USSR	21 MAR	104.6	83.0	989	961		
1979 028A	COSMOS 1091	11320	USSR	7 APR	104.8	82.9	1006	958		
1979 028B		11321	USSR	7 APR	104.6	82.9	992	962		
1979 030A	COSMOS 1092	11326	USSR	11 APR	104.7	83.0	1002	958		
1979 030B		11327	USSR	11 APR	104.6	82.9	997	954		
1979 031A	MOLNIYA 1-43	11328	USSR	12 APR	100.4	63.7	1460	99		
1979 031D		11551	USSR	12 APR	620.8	64.1	35321	132		
1979 032A	COSMOS 1093	11331	USSR	14 APR	94.7	81.2	511	499		
1979 032B		11332	USSR	14 APR	95.8	81.2	593	522		
1979 035A	RADUGA 5	11343	USSR	25 APR	1436.5	10.5	35802	35785		
1979 035E		17873	USSR	25 APR	1437.8	10.6	35946	35691		
1979 038A	FLTSATCOM 2	11353	US	4 MAY	1461.6	8.5	36324	36245		
1979 046A	COSMOS 1104	11378	USSR	31 MAY	104.7	82.9	1003	955		
1979 046B		11379	USSR	31 MAY	104.6	82.9	989	957		
1979 048A	MOLNIYA 3-12	11384	USSR	5 JUN	365.9	63.0	20987	146		
1979 050A		11389	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050B		11403	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050C		11408	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050D		11410	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 050G		11534	US	6 JUN	ELEMENTS NOT AVAILABLE					
1979 053A		11397	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 053C		11436	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 053D		20364	US	10 JUN	ELEMENTS NOT AVAILABLE					
1979 057A	NOAA 6	11416	US	27 JUN	100.8	98.6	803	786		
1979 057B		11419	US	27 JUN	99.1	98.3	715	713		
1979 057C		11634	US	27 JUN	99.0	98.3	716	710		
1979 058A	COSMOS 1109	11417	USSR	27 JUN	CURRENT ELEMENTS NOT MAINTAINED					
1979 058D		11555	USSR	27 JUN	721.6	67.4	38577	1966		
1979 058E		12833	USSR	27 JUN	715.1	67.2	38273	1948		
1979 058F		12834	USSR	27 JUN	719.4	67.7	34813	5620		
1979 058G		12909	USSR	27 JUN	719.6	68.2	39114	1329		
1979 058H		12995	USSR	27 JUN	698.9	66.3	38251	1169		
1979 058J		13960	USSR	27 JUN	720.5	67.3	37953	2534		
1979 060A	COSMOS 1110	11425	USSR	28 JUN	100.6	74.0	798	776		
1979 060B		11427	USSR	28 JUN	100.4	74.0	794	762		
1979 060C		14866	USSR	28 JUN	99.4	74.0	734	729		
1979 060D		15784	USSR	28 JUN	99.9	74.0	755	749		
1979 062A	GORIZONT 2	11440	USSR	5 JUL	1436.1	10.1	35809	35762		
1979 062D		14005	USSR	5 JUL	1474.6	10.5	36561	36512		
1979 067A	COSMOS 1116	11457	USSR	20 JUL	92.8	81.2	418	406		
1979 067B		11458	USSR	20 JUL	94.9	81.2	541	486		
1979 070A	MOLNIYA 1-44	11474	USSR	31 JUL	717.6	63.8	38918	1428		
1979 070D		11556	USSR	31 JUL	733.1	64.1	39131	1974		
1979 072A	WESTAR 3	11484	US	10 AUG	1440.9	3.9	35891	35870		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1979 LAUNCHES (CONT.)										
1979 077A	COSMOS 1124	11509	USSR	28 AUG	717.0	67.6	35137	5179		
1979 077D		11550	USSR	28 AUG	723.9	67.6	35568	5085		
1979 077E		12814	USSR	28 AUG	583.2	65.8	33201	287		
1979 077F		12815	USSR	28 AUG	708.7	64.3	36960	2947		
1979 077G		12816	USSR	28 AUG	686.5	63.6	36895	1904		
1979 077H		12817	USSR	28 AUG	720.6	63.3	37929	2564		
1979 078A	COSMOS 1125	11510	USSR	28 AUG	100.6	74.0	797	778		
1979 078B		11511	USSR	28 AUG	100.4	74.0	791	767		
1979 078C		14805	USSR	28 AUG	99.5	74.1	737	727		
1979 078D		14806	USSR	28 AUG	100.4	74.0	782	775		
1979 078E		18650	USSR	28 AUG	99.4	74.1	733	722		
1979 084A	COSMOS 1130	11538	USSR	25 SEP	114.6	74.0	1478	1395		
1979 084B	COSMOS 1131	11539	USSR	25 SEP	114.8	74.0	1480	1409		
1979 084C	COSMOS 1132	11540	USSR	25 SEP	114.9	74.0	1479	1424		
1979 084D	COSMOS 1133	11541	USSR	25 SEP	115.1	74.0	1481	1437		
1979 084E	COSMOS 1134	11542	USSR	25 SEP	115.3	74.0	1481	1452		
1979 084F	COSMOS 1135	11543	USSR	25 SEP	115.4	74.0	1490	1459		
1979 084G	COSMOS 1136	11544	USSR	25 SEP	115.6	74.0	1495	1469		
1979 084H	COSMOS 1137	11545	USSR	25 SEP	115.8	74.0	1512	1470		
1979 084J		11546	USSR	25 SEP	117.8	74.0	1682	1480		
1979 086A		11558	US	1 OCT	ELEMENTS NOT AVAILABLE					
1979 086C		11560	US	1 OCT	ELEMENTS NOT AVAILABLE					
1979 087A	EKRAN 4	11561	USSR	3 OCT	1436.6	10.3	35858	35734		
1979 087C		17939	USSR	3 OCT	1433.5	10.3	35909	35563		
1979 089A	COSMOS 1140	11573	USSR	11 OCT	100.4	74.1	789	764		
1979 089B		11574	USSR	11 OCT	100.2	74.1	778	757		
1979 089C		14807	USSR	11 OCT	99.4	74.1	734	722		
1979 089D		14345	USSR	11 OCT	99.9	74.0	767	743		
1979 089E		19048	USSR	11 OCT	100.0	74.0	775	746		
1979 090A	COSMOS 1141	11585	USSR	16 OCT	104.6	83.0	995	953		
1979 090B		11586	USSR	16 OCT	104.4	82.9	988	947		
1979 090C		11587	USSR	16 OCT	102.5	82.9	895	856		
1979 091A	MOLNIYA 1-45	11589	USSR	20 OCT	717.8	62.1	39705	652		
1979 091D		11602	USSR	20 OCT	731.8	62.2	40405	636		
1979 093A	COSMOS 1143	11600	USSR	26 OCT	95.5	81.2	547	534		
1979 093B		11601	USSR	26 OCT	95.9	81.2	590	530		
1979 095A	METEOR 2-5	11605	USSR	31 OCT	102.4	81.2	879	862		
1979 095B		11608	USSR	31 OCT	102.4	81.2	915	832		
1979 098A		11621	US	21 NOV	1436.0	8.0	35794	35773		
1979 098B		11622	US	21 NOV	1436.0	8.0	35798	35771		
1979 098C		11623	US	21 NOV	1510.8	9.3	38518	35954		
1979 099A	COSMOS 1145	11629	USSR	27 NOV	94.8	81.2	516	505		
1979 099B		11630	USSR	27 NOV	95.6	81.2	582	515		
1979 101A	RCA SATCOM III	11635	US	7 DEC	788.9	8.1	35511	8297		
1979 105A	GORIZONT 3	11648	USSR	28 DEC	1436.0	9.9	35809	35759		
1979 105E		11684	USSR	28 DEC	1459.3	10.1	36311	36166		
1980 LAUNCHES										
1980 002A	MOLNIYA 1-46	11662	USSR	11 JAN	576.5	63.3	33009	125		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 002F		11670	USSR	11 JAN	730.4	63.8	40751	221		
1980 003A	COSMOS 1150	11667	USSR	14 JAN	104.8	82.9	1010	962		
1980 003B		11668	USSR	14 JAN	104.7	83.0	997	962		
1980 004A	FLTSATCOM 3	11669	US	18 JAN	1437.6	7.9	35906	35727		
1980 005A	COSMOS 1151	11671	USSR	23 JAN	96.4	82.5	597	572		
1980 005B		11672	USSR	23 JAN	97.2	82.5	637	609		
1980 007A	COSMOS 1153	11680	USSR	25 JAN	104.8	82.9	1013	959		
1980 007B		11691	USSR	25 JAN	104.7	82.9	1008	952		
1980 008A	COSMOS 1154	11682	USSR	30 JAN	95.7	81.2	555	550		
1980 008B		11683	USSR	30 JAN	96.1	81.2	605	535		
1980 011A		11690	US	9 FEB	718.0	64.5	20533	19832		
1980 011B		11705	US	9 FEB	289.4	63.7	15660	571		
1980 012A	COSMOS 1156	11691	USSR	11 FEB	114.5	74.0	1472	1396		
1980 012B	COSMOS 1157	11692	USSR	11 FEB	114.7	74.0	1475	1412		
1980 012C	COSMOS 1158	11693	USSR	11 FEB	115.0	74.0	1474	1431		
1980 012D	COSMOS 1159	11694	USSR	11 FEB	115.2	74.0	1476	1448		
1980 012E	COSMOS 1160	11695	USSR	11 FEB	115.4	74.0	1480	1464		
1980 012F	COSMOS 1161	11696	USSR	11 FEB	115.6	74.0	1500	1466		
1980 012G	COSMOS 1162	11697	USSR	11 FEB	115.8	74.0	1517	1469		
1980 012H	COSMOS 1163	11698	USSR	11 FEB	116.1	74.0	1541	1468		
1980 012J		11699	USSR	11 FEB	117.8	74.0	1692	1467		
1980 016A	RADUGA 6	11708	USSR	20 FEB	1437.0	10.0	35822	35786		
1980 016D		11728	USSR	20 FEB	1475.1	10.4	36618	36475		
1980 018A	AYAME 2	11715	JAPAN	22 FEB	1386.6	1.4	36839	32785		
1980 018C		11718	JAPAN	22 FEB	323.1	24.4	18175	263		
1980 019A		11720	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019B		11721	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019C		11731	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019D		11732	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019E		11733	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019F		11734	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019G		11745	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 019H		11746	US	3 MAR	ELEMENTS NOT AVAILABLE					
1980 022A	COSMOS 1168	11735	USSR	17 MAR	104.7	82.9	1007	956		
1980 022B		11736	USSR	17 MAR	104.6	82.9	1000	952		
1980 022C		12404	USSR	17 MAR	103.1	82.9	929	882		
1980 026A	COSMOS 1171	11750	USSR	3 APR	104.8	65.8	1007	963		
1980 026B		11751	USSR	3 APR	104.6	65.8	983	969		
1980 026C		11752	USSR	3 APR	104.8	65.8	1004	961		
1980 028A	COSMOS 1172	11758	USSR	12 APR	717.3	65.9	38311	2019		
1980 028E		11762	USSR	12 APR	722.0	66.2	38910	1654		
1980 030A	COSMOS 1174	11765	USSR	18 APR	103.1	66.1	1439	374		
1980 030B - 030AY			USSR	18 APR	SEE NOTE		31*			31*
1980 032A		11783	US	26 APR	707.8	63.1	20447	19411		
1980 032B		11791	US	26 APR	215.1	63.2	10803	225		
1980 034A	COSMOS 1176	11788	USSR	29 APR	103.4	64.8	937	898		
1980 034D		11971	USSR	29 APR	103.1	64.8	923	884		
1980 039A	COSMOS 1181	11803	USSR	20 MAY	104.8	82.9	1002	967		
1980 039B		11804	USSR	20 MAY	104.7	82.9	995	961		
1980 044A	COSMOS 1184	11821	USSR	4 JUN	95.5	81.2	550	534		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 044B		11822	USSR	4 JUN	96.3	81.3	613	550		
1980 049A	GORIZONT 4	11841	USSR	14 JUN	1460.1	9.6	36270	36239		
1980 049F		11862	USSR	14 JUN	1470.4	9.8	36588	36321		
1980 050A	COSMOS 1188	11844	USSR	14 JUN	718.3	67.4	37726	2655		
1980 050B		11847	USSR	14 JUN	722.8	67.6	37868	2735		
1980 051B		11849	USSR	18 JUN	96.2	97.6	595	553		
1980 052C		11852	US	18 JUN	ELEMENTS NOT AVAILABLE					
1980 056A	COSMOS 1190	11869	USSR	1 JUL	100.6	74.0	792	778		
1980 056B		11870	USSR	1 JUL	100.4	74.1	791	766		
1980 056C		14808	USSR	1 JUL	100.7	74.0	808	779		
1980 056D		14809	USSR	1 JUL	100.5	74.0	794	774		
1980 057A	COSMOS 1191	11871	USSR	2 JUL	716.7	67.7	34758	5541		
1980 057D		11888	USSR	2 JUL	722.0	67.5	35389	5173		
1980 057E		13999	USSR	2 JUL	708.6	65.6	37648	2254		
1980 058A	COSMOS 1192	11875	USSR	9 JUL	114.5	74.0	1472	1393		
1980 058B	COSMOS 1193	11876	USSR	9 JUL	114.7	74.0	1472	1412		
1980 058C	COSMOS 1194	11877	USSR	9 JUL	114.9	74.0	1472	1430		
1980 058D	COSMOS 1195	11878	USSR	9 JUL	115.1	74.0	1473	1447		
1980 058E	COSMOS 1196	11879	USSR	9 JUL	115.3	74.0	1474	1465		
1980 058F	COSMOS 1197	11880	USSR	9 JUL	115.5	74.0	1490	1469		
1980 058G	COSMOS 1198	11881	USSR	9 JUL	115.7	74.0	1506	1472		
1980 058H	COSMOS 1199	11882	USSR	9 JUL	116.0	74.0	1528	1471		
1980 058J		11883	USSR	9 JUL	117.6	74.0	1680	1467		
1980 060A	EKRAN 5	11890	USSR	14 JUL	1436.1	0.0	35834	35737		
1980 060F		14193	USSR	14 JUL	1417.3	9.7	35496	35337		
1980 063A	MOLNIYA 3-13	11896	USSR	18 JUL	717.8	63.2	38736	1618		
1980 063D		11909	USSR	18 JUL	732.5	63.4	39500	1576		
1980 069A	COSMOS 1206	11932	USSR	15 AUG	95.5	81.2	544	538		
1980 069B		11933	USSR	15 AUG	96.1	81.2	605	539		
1980 073A	METEOR 2-6	11962	USSR	9 SEP	102.1	81.2	885	835		
1980 073B		11963	USSR	9 SEP	102.2	81.2	909	816		
1980 074A	GOES 4	11964	US	9 SEP	1451.2	8.0	36208	35954		
1980 074C		11970	US	9 SEP	1767.3	0.1	49745	34341		
1980 081A	RADUGA 7	12003	USSR	5 OCT	1437.1	9.6	35828	35783		
1980 081F		12447	USSR	5 OCT	1440.3	9.7	35879	35860		
1980 085A	COSMOS 1217	12032	USSR	24 OCT	716.8	67.2	37591	2714		
1980 085D		12035	USSR	24 OCT	721.9	67.5	38350	2208		
1980 087A	FLTSATCOM 4	12046	US	31 OCT	1436.1	7.9	35808	35764		
1980 087B		12069	US	31 OCT	182.9	26.1	8322	266		
1980 089A	COSMOS 1220	12054	USSR	4 NOV	97.8	65.0	753	552		
1980 089B - 089CG			USSR	4 NOV	SEE NOTE		32*			32*
1980 091A	SBS 1	12065	US	15 NOV	1436.0	3.7	35796	35774		
1980 092A	MOLNIYA 1-48	12066	USSR	16 NOV	713.9	62.8	39419	742		
1980 092D		12070	USSR	16 NOV	733.5	63.3	40409	719		
1980 093A	COSMOS 1222	12071	USSR	21 NOV	96.0	81.2	568	564		
1980 093B		12072	USSR	21 NOV	96.1	81.2	608	536		
1980 095A	COSMOS 1223	12078	USSR	27 NOV	718.2	68.4	35513	4862		
1980 095E		12086	USSR	27 NOV	723.4	68.1	36198	4432		
1980 097A	COSMOS 1225	12087	USSR	5 DEC	104.8	82.9	1023	942		
1980 097B		12088	USSR	5 DEC	104.6	82.9	1010	939		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1980 LAUNCHES (CONT.)										
1980 098A	INTELSAT 5 F-2	12089	ITSO	6 DEC	1436.1	3.1	35807	35767		
1980 098B		12445	US	6 DEC	228.1	23.7	11603	372		
1980 099A	COSMOS 1226	12091	USSR	10 DEC	104.8	82.9	1007	958		
1980 099B		12092	USSR	10 DEC	104.6	82.9	997	954		
1980 100A		12093	US	13 DEC	ELEMENTS NOT AVAILABLE					
1980 100B		12094	US	13 DEC	ELEMENTS NOT AVAILABLE					
1980 102A	COSMOS 1228	12107	USSR	23 DEC	114.4	74.0	1462	1391		
1980 102B	COSMOS 1229	12108	USSR	23 DEC	114.6	74.0	1462	1412		
1980 102C	COSMOS 1230	12109	USSR	23 DEC	114.4	74.0	1462	1397		
1980 102D	COSMOS 1231	12110	USSR	23 DEC	114.5	74.0	1462	1404		
1980 102E	COSMOS 1232	12111	USSR	23 DEC	114.6	74.0	1462	1410		
1980 102F	COSMOS 1233	12112	USSR	23 DEC	114.7	74.0	1462	1417		
1980 102G	COSMOS 1234	12113	USSR	23 DEC	114.6	74.0	1462	1407		
1980 102H	COSMOS 1235	12114	USSR	23 DEC	114.6	74.0	1462	1411		
1980 102J		12115	USSR	23 DEC	114.9	74.0	1466	1436		
1980 103A	PROGNOZ 8	12116	USSR	25 DEC	5687.8	65.8	197364	978		
1980 104A	EKRAN 6	12120	USSR	26 DEC	1435.4	9.5	35785	35760		
1980 104B		12471	USSR	26 DEC	1420.9	9.4	35634	35343		
1981 LAUNCHES										
1981 002A	MOLNIYA 3-14	12133	USSR	9 JAN	717.7	64.0	38935	1417		
1981 002B		12134	USSR	9 JAN	732.1	64.2	39191	1868		
1981 003A	COSMOS 1238	12138	USSR	16 JAN	106.5	83.0	1728	396		
1981 003B		12139	USSR	16 JAN	105.1	83.0	1602	393		
1981 006A	COSMOS 1241	12149	USSR	21 JAN	104.9	65.8	995	986		
1981 006B		12150	USSR	21 JAN	104.6	65.8	1009	943		
1981 006C		12151	USSR	21 JAN	104.9	65.8	991	983		
1981 008A	COSMOS 1242	12154	USSR	27 JAN	96.3	81.2	593	572		
1981 008B		12155	USSR	27 JAN	96.5	81.2	632	545		
1981 009A	MOLNIYA 1-49	12156	USSR	30 JAN	718.3	63.9	38132	2246		
1981 009D		12159	USSR	30 JAN	731.6	64.1	38601	2431		
1981 012A	KIKU 3	12295	JAPAN	11 FEB	392.4	28.1	22530	223		
1981 012C		12787	JAPAN	11 FEB	520.1	28.3	29837	254		
1981 013A	COSMOS 1244	12297	USSR	12 FEB	104.7	83.0	1004	958		
1981 013B		12298	USSR	12 FEB	104.6	83.0	999	953		
1981 016A	COSMOS 1247	12303	USSR	19 FEB	711.0	67.4	35266	4754		
1981 016E		12311	USSR	19 FEB	703.5	67.3	34914	4736		
1981 016F		12984	USSR	19 FEB	710.5	67.4	35207	4785		
1981 016G		12985	USSR	19 FEB	710.1	65.4	37292	2682		
1981 016H		12992	USSR	19 FEB	706.6	65.8	38696	1106		
1981 018A	COMSTAR 4	12309	US	21 FEB	1436.0	5.7	35789	35783		
1981 018B		12363	US	21 FEB	649.7	20.8	36315	627		
1981 021A	COSMOS 1249	12319	USSR	5 MAR	103.9	65.0	977	904		
1981 021C		12551	USSR	5 MAR	103.5	65.0	964	888		
1981 022A	COSMOS 1250	12320	USSR	6 MAR	114.4	74.0	1469	1388		
1981 022B	COSMOS 1251	12321	USSR	6 MAR	114.6	74.0	1470	1401		
1981 022C	COSMOS 1252	12322	USSR	6 MAR	114.7	74.0	1470	1416		
1981 022D	COSMOS 1253	12323	USSR	6 MAR	115.6	74.0	1494	1466		
1981 022E	COSMOS 1254	12324	USSR	6 MAR	114.9	74.0	1470	1429		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 022F	COSMOS 1255	12325	USSR	6 MAR	115.0	74.0	1470	1443		
1981 022G	COSMOS 1256	12326	USSR	6 MAR	115.2	74.0	1475	1454		
1981 022H	COSMOS 1257	12327	USSR	6 MAR	115.4	74.0	1477	1466		
1981 022J		12328	USSR	6 MAR	117.6	74.0	1694	1454		
1981 025A		12339	US	16 MAR	ELEMENTS NOT AVAILABLE					
1981 025C		12371	US	16 MAR	ELEMENTS NOT AVAILABLE					
1981 027A	RADUGA 8	12351	USSR	18 MAR	1434.9	9.5	36113	35410		
1981 027F		14194	USSR	18 MAR	1474.5	9.7	36616	36452		
1981 028B - 028BW			USSR	20 MAR	SEE NOTE		33*			33*
1981 030A	MOLNIYA 3-15	12368	USSR	24 MAR	716.4	64.0	40072	213		
1981 030D		12383	USSR	24 MAR	732.5	64.5	40706	369		
1981 031A	COSMOS 1261	12376	USSR	31 MAR	716.8	67.7	35832	4476		
1981 031D		12384	USSR	31 MAR	707.4	67.7	35173	4669		
1981 031E		12892	USSR	31 MAR	719.5	68.1	35704	4735		
1981 031F		12893	USSR	31 MAR	716.1	64.2	37401	2868		
1981 031G		12894	USSR	31 MAR	718.4	65.3	37210	3174		
1981 033A	COSMOS 1263	12388	USSR	9 APR	106.2	83.0	1710	388		
1981 033B		12389	USSR	9 APR	104.1	82.9	1531	372		
1981 036E		12427	USSR	16 APR	102.4	99.0	989	752		
1981 037A	COSMOS 1266	12409	USSR	21 APR	103.6	64.8	962	891		
1981 037D		12435	USSR	21 APR	103.4	64.8	940	893		
1981 038A		12418	US	24 APR	ELEMENTS NOT AVAILABLE					
1981 038B		12446	US	24 APR	ELEMENTS NOT AVAILABLE					
1981 041A	COSMOS 1269	12442	USSR	7 MAY	100.7	74.1	797	783		
1981 041B		12443	USSR	7 MAY	100.6	74.1	789	780		
1981 041C		13498	USSR	7 MAY	100.2	74.0	774	756		
1981 041D		14346	USSR	7 MAY	99.7	74.0	752	735		
1981 043A	METEOR 2-7	12456	USSR	14 MAY	102.2	81.3	888	836		
1981 043B		12457	USSR	14 MAY	102.4	81.3	915	825		
1981 043C		15769	USSR	14 MAY	102.4	81.3	915	826		
1981 044A	NNSS 30480	12458	US	15 MAY	ELEMENTS NOT AVAILABLE					
1981 046A	COSMOS 1271	12464	USSR	19 MAY	96.3	81.2	589	573		
1981 046B		12465	USSR	19 MAY	96.7	81.2	636	566		
1981 049A	GOES 5	12472	US	22 MAY	1435.2	5.0	35786	35752		
1981 050A	INTELSAT 5 F-1	12474	ITSO	23 MAY	1436.1	3.6	35809	35767		
1981 050B		12497	US	23 MAY	220.2	24.0	11116	288		
1981 053A	COSMOS 1275	12504	USSR	4 JUN	104.7	83.0	1005	953		
1981 053B - 053MT			USSR	4 JUN	SEE NOTE		34*			34*
1981 053LZ		18592	USSR	4 JUN	103.7	83.0	945	923		
1981 053MA		18593	USSR	4 JUN	101.7	82.7	880	798		
1981 054A	MOLNIYA 3-16	12512	USSR	9 JUN	717.7	64.0	39396	955		
1981 054E		12519	USSR	9 JUN	733.5	64.3	39734	1394		
1981 057A	METEOSAT 2	12544	ESA	19 JUN	1458.7	4.9	36326	36128		
1981 057B	APPLE	12545	INDIA	19 JUN	1439.3	8.6	35954	35745		
1981 057C		12546	ESA	19 JUN	521.5	10.4	29929	238		
1981 057D		12562	ESA	19 JUN	149.3	10.5	5740	148		
1981 057F		20837	ESA	19 JUN	1449.1	8.5	36339	35742		
1981 058A	COSMOS 1278	12547	USSR	19 JUN	717.1	67.2	36734	3588		
1981 058D		12561	USSR	19 JUN	724.0	67.5	37821	2841		
1981 058E		17256	USSR	19 JUN	717.6	67.2	36814	3533		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 059A	NOAA 7	12553	US	23 JUN	101.7	99.0	848	829		
1981 059B		12559	US	23 JUN	100.9	98.9	806	799		
1981 059C		12560	US	23 JUN	100.9	98.9	806	799		
1981 060D		12563	USSR	24 JUN	645.5	63.8	36636	92		
1981 061A	EKRAN 7	12564	USSR	25 JUN	1436.4	9.2	35813	35770		
1981 061F		12851	USSR	25 JUN	1425.6	9.1	35584	35577		
1981 065A	METEOR 1-31	12585	USSR	10 JUL	96.6	97.8	617	578		
1981 065B		12586	USSR	10 JUL	96.8	97.9	620	591		
1981 069A	RADUGA 9	12618	USSR	30 JUL	1436.1	9.0	35799	35775		
1981 069F		12850	USSR	30 JUL	1474.0	9.3	36623	36425		
1981 070A	DE 1	12624	US	3 AUG	409.8	88.8	23268	528		
1981 070E		12679	US	3 AUG	411.0	88.9	23322	541		
1981 070J		14620	US	3 AUG	395.5	89.0	22481	457		
1981 070K		14621	US	3 AUG	397.8	88.9	22589	486		
1981 070L		19478	US	3 AUG	403.9	88.9	22915	528		
1981 071A	COSMOS 1285	12627	USSR	4 AUG	727.0	67.7	36348	4459		
1981 071D		12680	USSR	4 AUG	722.8	67.8	35996	4605		
1981 071E		12993	USSR	4 AUG	727.7	67.8	36321	4523		
1981 071F		13961	USSR	4 AUG	726.8	64.2	38048	2748		
1981 073A	FLTSATCOM 5	12635	US	6 AUG	1460.4	7.5	36306	36214		
1981 074A	COSMOS 1287	12636	USSR	6 AUG	115.7	74.0	1511	1461		
1981 074B	COSMOS 1288	12637	USSR	6 AUG	115.5	74.0	1491	1462		
1981 074C	COSMOS 1289	12638	USSR	6 AUG	114.7	74.0	1462	1424		
1981 074D	COSMOS 1290	12639	USSR	6 AUG	114.9	74.0	1462	1439		
1981 074E	COSMOS 1291	12640	USSR	6 AUG	115.1	74.0	1462	1456		
1981 074F	COSMOS 1292	12641	USSR	6 AUG	115.3	74.0	1475	1461		
1981 074G	COSMOS 1293	12642	USSR	6 AUG	114.6	74.0	1463	1406		
1981 074H	COSMOS 1294	12643	USSR	6 AUG	114.4	74.0	1462	1390		
1981 074J		12644	USSR	6 AUG	117.4	74.0	1669	1462		
1981 075A	INTERCOSMOS	12645	USSR	7 AUG	101.6	81.2	883	788		
1981 075B		12646	USSR	7 AUG	101.8	81.2	891	791		
1981 076A	GMS 2	12677	JAPAN	10 AUG	1446.5	7.6	36051	35928		
1981 077A	COSMOS 1295	12681	USSR	12 AUG	104.6	82.9	1007	945		
1981 077B		12682	USSR	12 AUG	104.5	82.9	994	944		
1981 081A	COSMOS 1299	12783	USSR	24 AUG	103.9	65.1	982	906		
1981 082A	COSMOS 1300	12785	USSR	24 AUG	96.8	82.5	614	594		
1981 082B		12786	USSR	24 AUG	97.3	82.5	642	617		
1981 084A	COSMOS 1302	12791	USSR	28 AUG	100.6	74.0	798	771		
1981 084B		12792	USSR	28 AUG	100.4	74.0	787	767		
1981 084C		12793	USSR	28 AUG	100.0	74.0	765	755		
1981 084D		14810	USSR	28 AUG	100.6	74.0	802	771		
1981 087A	COSMOS 1304	12803	USSR	4 SEP	103.8	82.9	972	904		
1981 087B		12804	USSR	4 SEP	103.7	82.9	964	901		
1981 088A	COSMOS 1305	12818	USSR	11 SEP	263.7	63.5	13303	1182		
1981 088F		12827	USSR	11 SEP	262.4	63.5	13264	1130		
1981 088G		14131	USSR	11 SEP	247.5	63.2	12490	872		
1981 088H		18598	USSR	11 SEP	251.1	63.7	12918	691		
1981 091A	COSMOS 1308	12835	USSR	18 SEP	104.7	82.9	1001	958		
1981 091B		12836	USSR	18 SEP	104.6	82.9	993	959		
1981 094A	OREOL 3	12848	USSR	21 SEP	106.2	82.5	1706	395		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1981 LAUNCHES (CONT.)										
1981 094B		12849	USSR	21 SEP	108.2	82.5	1884	399		
1981 096A	SBS 2	12855	US	24 SEP	1436.2	3.8	35799	35776		
1981 098A	COSMOS 1312	12879	USSR	30 SEP	115.9	82.6	1500	1488		
1981 098B		12880	USSR	30 SEP	115.8	82.6	1498	1486		
1981 100C		12889	US	6 OCT	118.7	99.9	2699	549		
1981 102A	RADUGA 10	12897	USSR	9 OCT	1436.5	8.9	35814	35773		
1981 102F		14195	USSR	9 OCT	1436.5	8.9	35852	35736		
1981 103A	COSMOS 1315	12903	USSR	13 OCT	96.5	81.2	606	575		
1981 103B		12904	USSR	13 OCT	96.9	81.2	640	581		
1981 105A	MOLNIYA 3-17	12915	USSR	17 OCT	713.6	63.7	39453	694		
1981 105E		12920	USSR	17 OCT	733.2	64.0	40276	838		
1981 106A	VENERA 13	12927	USSR	30 OCT	HELIOCENTRIC ORBIT					
1981 107A		12930	US	31 OCT	ELEMENTS NOT AVAILABLE					
1981 107C		12932	US	31 OCT	ELEMENTS NOT AVAILABLE					
1981 108A	COSMOS 1317	12933	USSR	31 OCT	718.7	68.2	35570	4831		
1981 108D		12940	USSR	31 OCT	723.3	68.1	36299	4326		
1981 108E		14734	USSR	31 OCT	713.6	65.3	36709	3438		
1981 108F		14735	USSR	31 OCT	714.7	65.1	36478	3725		
1981 108G		14736	USSR	31 OCT	719.4	62.9	38860	1576		
1981 110A	VENERA 14	12938	USSR	4 NOV	HELIOCENTRIC ORBIT					
1981 113A	MOLNIYA 1-51	12959	USSR	17 NOV	717.7	63.9	39818	533		
1981 113D		12986	USSR	17 NOV	698.9	64.2	38740	677		
1981 114A	RCA SATCOM IIIR	12967	US	20 NOV	1438.5	1.1	35853	35812		
1981 116A	COSMOS 1320	12975	USSR	28 NOV	117.2	74.0	1633	1479		
1981 116B	COSMOS 1321	12976	USSR	28 NOV	117.2	74.0	1629	1479		
1981 116C	COSMOS 1322	12977	USSR	28 NOV	117.2	74.0	1627	1478		
1981 116D	COSMOS 1323	12978	USSR	28 NOV	117.1	74.0	1622	1479		
1981 116E	COSMOS 1324	12979	USSR	28 NOV	117.1	74.0	1618	1479		
1981 116F	COSMOS 1325	12980	USSR	28 NOV	117.0	74.0	1615	1479		
1981 116G	COSMOS 1326	12981	USSR	28 NOV	117.0	74.0	1609	1478		
1981 116H	COSMOS 1327	12982	USSR	28 NOV	116.9	74.0	1601	1479		
1981 116J		12983	USSR	28 NOV	117.5	74.0	1661	1478		
1981 117A	COSMOS 1328	12987	USSR	3 DEC	96.9	82.5	623	601		
1981 117B		12988	USSR	3 DEC	97.3	82.5	643	617		
1981 119A	INTELSAT 5 F-3	12994	ITSO	15 DEC	1436.2	2.7	35812	35765		
1981 119B		13007	US	15 DEC	224.1	23.6	11376	312		
1981 120A	RADIO 3	12997	USSR	17 DEC	118.4	83.0	1655	1562		
1981 120B	RADIO 8	12998	USSR	17 DEC	119.6	83.0	1681	1648		
1981 120C	RADIO 5	12999	USSR	17 DEC	119.4	82.9	1668	1642		
1981 120D	RADIO 4	13000	USSR	17 DEC	119.3	83.0	1664	1631		
1981 120E	RADIO 7	13001	USSR	17 DEC	119.1	83.0	1656	1622		
1981 120F	RADIO 6	13002	USSR	17 DEC	118.6	83.0	1657	1578		
1981 120G		13003	USSR	17 DEC	120.8	82.9	1782	1650		
1981 122A	MARECS A	13010	ESA	20 DEC	1436.1	4.8	35800	35777		
1981 122B	CAT 4	13011	ESA	20 DEC	550.9	10.6	31539	224		
1981 123A	MOLNIYA 1-52	13012	USSR	23 DEC	717.7	63.9	38204	2145		
1981 123D		13016	USSR	23 DEC	695.2	64.1	37021	2214		
1982 LAUNCHES										

OBJECTS IN ORBIT

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 001A	COSMOS 1331	13027	USSR	7 JAN	100.4	74.0	795	758		
1982 001B		13028	USSR	7 JAN	100.3	74.0	790	758		
1982 001C		13029	USSR	7 JAN	100.0	74.0	769	750		
1982 001D		13030	USSR	7 JAN	99.5	74.0	753	717		
1982 003A	COSMOS 1333	13033	USSR	14 JAN	104.9	82.9	1012	963		
1982 003B		13034	USSR	14 JAN	104.7	82.9	1005	957		
1982 004A	RCA SATCOM IV	13035	US	16 JAN	1445.9	0.4	36000	35956		
1982 006C		13103	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006D		13104	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006E		13105	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 006F		13152	US	21 JAN	ELEMENTS NOT AVAILABLE					
1982 009A	EKRAN 8	13056	USSR	5 FEB	1441.0	8.7	36003	35761		
1982 009D		13059	USSR	5 FEB	538.2	48.3	29461	1614		
1982 009F		14117	USSR	5 FEB	1426.0	8.6	35757	35419		
1982 012A	COSMOS 1339	13065	USSR	17 FEB	104.7	82.9	1013	946		
1982 012B		13066	USSR	17 FEB	104.6	82.9	1007	940		
1982 013A	COSMOS 1340	13067	USSR	19 FEB	96.7	81.2	606	595		
1982 013B		13068	USSR	19 FEB	96.8	81.2	628	581		
1982 014A	WESTAR 4	13069	US	26 FEB	1443.3	0.5	35944	35909		
1982 015A	MOLNIYA 1-53	13070	USSR	26 FEB	717.8	63.5	39404	948		
1982 015D		13075	USSR	26 FEB	730.8	63.8	40022	973		
1982 016A	COSMOS 1341	13080	USSR	3 MAR	719.0	67.5	35703	4712		
1982 016D		13090	USSR	3 MAR	709.0	67.4	35587	4331		
1982 017A	INTELSAT 5 F-4	13083	ITSO	5 MAR	1436.1	2.7	35802	35774		
1982 019A		13086	US	6 MAR	ELEMENTS NOT AVAILABLE					
1982 019B		13089	US	6 MAR	ELEMENTS NOT AVAILABLE					
1982 020A	GORIZONT 5	13092	USSR	15 MAR	1461.5	8.5	36433	36132		
1982 020F		13899	USSR	15 MAR	1460.0	8.7	36372	36132		
1982 023A	MOLNIYA 3-18	13107	USSR	24 MAR	696.1	63.9	39146	132		
1982 023D		13112	USSR	24 MAR	729.7	64.3	40722	217		
1982 024A	COSMOS 1344	13110	USSR	24 MAR	104.8	82.9	1005	964		
1982 024B		13111	USSR	24 MAR	104.7	82.9	1008	950		
1982 025A	METEOR 2	13113	USSR	25 MAR	104.0	82.5	957	933		
1982 025B		13114	USSR	25 MAR	104.0	82.5	957	934		
1982 027A	COSMOS 1346	13120	USSR	31 MAR	96.5	81.2	608	578		
1982 027B		13121	USSR	31 MAR	96.9	81.2	636	579		
1982 029A	COSMOS 1348	13124	USSR	7 APR	718.7	67.8	35766	4635		
1982 029D		13169	USSR	7 APR	705.4	67.9	35577	4164		
1982 030A	COSMOS 1349	13127	USSR	8 APR	104.8	82.9	1007	963		
1982 030B		13128	USSR	8 APR	104.7	82.9	999	958		
1982 031A	INSAT-1A	13129	INDIA	10 APR	1434.2	0.1	35936	35562		
1982 037A	COSMOS 1354	13148	USSR	28 APR	100.7	74.0	797	784		
1982 037B		13149	USSR	28 APR	100.5	74.0	793	774		
1982 037C		14811	USSR	28 APR	100.8	74.0	812	776		
1982 039A	COSMOS 1356	13153	USSR	5 MAY	96.8	81.2	618	591		
1982 039B		13154	USSR	5 MAY	97.2	81.2	663	585		
1982 040A	COSMOS 1357	13160	USSR	6 MAY	114.6	74.0	1476	1399		
1982 040B	COSMOS 1358	13161	USSR	6 MAY	114.8	74.0	1478	1414		
1982 040C	COSMOS 1359	13162	USSR	6 MAY	115.0	74.0	1478	1430		
1982 040D	COSMOS 1360	13163	USSR	6 MAY	115.2	74.0	1479	1444		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 LAUNCHES (CONT.)										
1982 040E	COSMOS 1361	13164	USSR	5 MAY	115.3	74.0	1481	1459		
1982 040F	COSMOS 1362	13165	USSR	6 MAY	115.5	74.0	1493	1464		
1982 040G	COSMOS 1363	13166	USSR	6 MAY	115.7	74.0	1503	1471		
1982 040H	COSMOS 1364	13167	USSR	6 MAY	115.9	74.0	1522	1471		
1982 040J		13168	USSR	6 MAY	117.7	74.1	1686	1470		
1982 041C		13172	US	11 MAY	ELEMENTS NOT AVAILABLE					
1982 043A	COSMOS 1365	13175	USSR	14 MAY	103.6	65.1	960	900		
1982 043D		13594	USSR	14 MAY	103.3	65.1	946	887		
1982 044A	COSMOS 1366	13177	USSR	17 MAY	1436.4	8.2	35823	35760		
1982 044F		14114	USSR	17 MAY	1436.0	8.1	35864	35705		
1982 045A	COSMOS 1367	13205	USSR	20 MAY	717.9	67.1	36165	4197		
1982 045D		13215	USSR	20 MAY	704.0	67.0	36207	3467		
1982 050A	MOLNIYA 1-54	13237	USSR	28 MAY	717.1	64.4	40011	309		
1982 050E		13253	USSR	28 MAY	732.0	64.7	40611	443		
1982 051A	COSMOS 1371	13241	USSR	1 JUN	100.7	74.0	802	781		
1982 051B		13242	USSR	1 JUN	100.5	74.0	800	762		
1982 051C		14398	USSR	1 JUN	100.4	74.1	778	774		
1982 051D		18502	USSR	1 JUN	100.4	74.1	779	777		
1982 051E		18509	USSR	1 JUN	100.4	74.0	786	767		
1982 051F		18510	USSR	1 JUN	100.4	74.0	792	765		
1982 051G		19102	USSR	1 JUN	100.3	74.1	786	762		
1982 052A	COSMOS 1372	13243	USSR	1 JUN	103.9	64.9	978	907		
1982 052D		13416	USSR	1 JUN	103.6	64.9	949	907		
1982 055A	COSMOS 1375	13259	USSR	5 JUN	105.0	65.8	1009	980		
1982 055B - 055M			USSR	6 JUN	SEE NOTE		37*			37*
1982 058A	GESTAR 5	13269	US	9 JUN	1436.1	0.0	35797	35777		
1982 059A	COSMOS 1378	13271	USSR	10 JUN	96.9	82.5	625	596		
1982 059B		13272	USSR	10 JUN	97.3	82.5	645	615		
1982 064A	COSMOS 1382	13295	USSR	25 JUN	718.7	68.1	35719	4682		
1982 064D		13298	USSR	25 JUN	708.4	67.8	35505	4383		
1982 066A	COSMOS 1383	13301	USSR	29 JUN	105.2	82.9	1023	984		
1982 066B		13302	USSR	29 JUN	105.1	82.9	1027	968		
1982 069A	COSMOS 1386	13353	USSR	7 JUL	104.6	83.0	1006	946		
1982 069B		13354	USSR	7 JUL	104.5	83.0	1009	929		
1982 072A	LANDSAT 4	13367	US	16 JUL	98.8	98.2	708	702		
1982 073A	COSMOS 1388	13375	USSR	21 JUL	114.5	74.0	1472	1391		
1982 073B	COSMOS 1389	13376	USSR	21 JUL	114.7	74.0	1473	1407		
1982 073C	COSMOS 1390	13377	USSR	21 JUL	114.9	74.0	1473	1424		
1982 073D	COSMOS 1391	13378	USSR	21 JUL	115.0	74.0	1473	1440		
1982 073E	COSMOS 1392	13379	USSR	21 JUL	115.2	74.0	1473	1457		
1982 073F	COSMOS 1393	13380	USSR	21 JUL	115.4	74.0	1481	1467		
1982 073G	COSMOS 1394	13381	USSR	21 JUL	115.6	74.0	1493	1473		
1982 073H	COSMOS 1395	13382	USSR	21 JUL	115.8	74.0	1513	1472		
1982 073J		13386	USSR	21 JUL	117.9	74.0	1709	1463		
1982 074A	MOLNIYA 1-55	13383	USSR	21 JUL	711.1	63.9	39850	172		
1982 074D		13390	USSR	21 JUL	697.5	64.0	39059	290		
1982 079A	COSMOS 1400	13402	USSR	5 AUG	96.5	81.2	597	581		
1982 079B		13403	USSR	5 AUG	96.9	81.2	646	576		
1982 082A	ANIK D-1	13431	CANADA	26 AUG	1438.2	0.9	35849	35804		
1982 083A	MOLNIYA 3-19	13432	USSR	27 AUG	718.7	64.0	38339	2060		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1982 LAUNCHES (CONT.)										
1982 083E		13446	USSR	27 AUG	733.1	64.2	38977	2131		
1982 087A	ETS 3	13492	JAPAN	3 SEP	107.2	44.6	1226	966		
1982 087B		13493	JAPAN	3 SEP	105.1	44.6	1009	991		
1982 087C		13510	JAPAN	3 SEP	107.0	44.6	1224	949		
1982 087D		14569	JAPAN	3 SEP	106.3	44.9	1145	964		
1982 092A	COSMOS 1408	13552	USSR	16 SEP	96.8	82.6	623	591		
1982 092B		13553	USSR	16 SEP	97.4	82.6	649	614		
1982 093A	EKRAN 9	13554	USSR	16 SEP	1435.4	8.2	35877	35670		
1982 093F		14115	USSR	16 SEP	1422.3	8.1	35543	35487		
1982 095A	COSMOS 1409	13585	USSR	22 SEP	719.1	65.8	36698	3722		
1982 095B		13591	USSR	22 SEP	707.2	65.9	37125	2705		
1982 096A	COSMOS 1410	13589	USSR	24 SEP	115.9	82.6	1498	1490		
1982 096B		13590	USSR	24 SEP	115.8	82.6	1496	1488		
1982 097A	INTELSAT 5F 5	13595	ITSO	29 SEP	1435.1	2.1	35805	35768		
1982 099A	COSMOS 1412	13600	USSR	2 OCT	103.9	64.8	972	912		
1982 099E		13653	USSR	2 OCT	103.6	64.8	941	913		
1982 100A	COSMOS 1413	13603	USSR	12 OCT	673.3	64.7	19074	19062		
1982 100D	COSMOS 1414	13606	USSR	12 OCT	675.7	64.7	19209	19049		
1982 100E	COSMOS 1415	13607	USSR	12 OCT	673.5	64.7	19073	19072		
1982 100F		13608	USSR	12 OCT	290.0	52.2	16001	268		
1982 100G		13609	USSR	12 OCT	308.1	52.1	17158	308		
1982 100H		13610	USSR	12 OCT	672.9	64.7	19074	19040		
1982 102A	COSMOS 1417	13617	USSR	19 OCT	104.7	83.0	1007	953		
1982 102B		13618	USSR	19 OCT	104.6	83.0	998	951		
1982 103A	GORIZONT 6	13624	USSR	20 OCT	1437.6	7.7	35828	35804		
1982 103E		13630	USSR	20 OCT	1435.0	7.7	35826	35703		
1982 105A	RCA SATCOM-V	13631	US	28 OCT	1436.1	1.0	35797	35777		
1982 106A		13636	US	30 OCT	1436.0	5.1	35788	35781		
1982 106B		13637	US	30 OCT	1436.1	1.9	35799	35773		
1982 106D		13643	US	30 OCT	1449.1	6.4	36209	35869		
1982 109A	COSMOS 1420	13648	USSR	11 NOV	100.6	74.0	800	770		
1982 109B		13649	USSR	11 NOV	100.4	74.0	793	764		
1982 109D		15528	USSR	11 NOV	100.3	74.0	782	761		
1982 110B	SBS 3	13651	US	11 NOV	1436.2	0.6	35798	35777		35*
1982 110C	ANIK C-3	13652	CANADA	12 NOV	1436.0	0.6	35797	35775		35*
1982 110D		13658	US	11 NOV	631.6	23.5	35688	322		
1982 110E		13666	US	11 NOV	630.6	23.1	35649	313		
1982 113A	KADUGA 11	13669	USSR	26 NOV	1473.8	7.2	36702	36341		
1982 113F		13954	USSR	26 NOV	1475.9	7.4	36663	36460		
1982 115B - 115AJ			USSR	8 DEC	SEE NOTE		36*			36*
1982 116A	METEOR 2-9	13718	USSR	14 DEC	101.8	81.3	883	802		
1982 116B		13719	USSR	14 DEC	101.9	81.2	897	795		
1982 116C		13720	USSR	14 DEC	101.8	81.2	884	801		
1982 116D		17755	USSR	14 DEC	101.8	81.3	896	795		
1982 118A		13736	US	21 DEC	101.0	98.6	810	798		
1982 118C		13738	US	21 DEC	98.2	98.6	677	671		
1983 LAUNCHES										
1983 001A	COSMOS 1428	13757	USSR	12 JAN	104.6	82.9	999	950		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 001B		13758	USSR	12 JAN	104.5	82.9	986	953		
1983 001C		14568	USSR	12 JAN	103.4	82.9	936	902		
1983 002A	COSMOS 1429	13761	USSR	19 JAN	115.8	74.0	1516	1464		
1983 002B	COSMOS 1430	13762	USSR	19 JAN	115.6	74.0	1496	1465		
1983 002C	COSMOS 1431	13763	USSR	19 JAN	115.4	74.0	1482	1462		
1983 002D	COSMOS 1432	13764	USSR	19 JAN	115.2	74.0	1465	1461		
1983 002E	COSMOS 1433	13765	USSR	19 JAN	115.0	74.0	1465	1444		
1983 002F	COSMOS 1434	13766	USSR	19 JAN	114.8	74.0	1465	1429		
1983 002G	COSMOS 1435	13767	USSR	19 JAN	114.6	74.0	1465	1412		
1983 002H	COSMOS 1436	13768	USSR	19 JAN	114.5	74.0	1464	1397		
1983 002J		13769	USSR	19 JAN	117.9	74.0	1693	1476		
1983 003A	COSMOS 1437	13770	USSR	20 JAN	96.7	81.2	609	587		
1983 003B		13771	USSR	20 JAN	96.9	81.2	642	575		
1983 004A	IRAS	13777	US	26 JAN	102.9	99.0	904	884		
1983 004B		13778	US	26 JAN	102.3	100.1	882	851		
1983 004C		13783	US	26 JAN	102.8	99.0	899	882		
1983 006A	CS-2A	13782	JAPAN	4 FEB	1448.7	4.3	36073	35993		
1983 006B		13786	JAPAN	4 FEB	154.0	28.5	6054	227		
1983 008A		13791	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008B		13792	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008C		13834	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008D		13835	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008E		13844	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008F		13845	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008G		13849	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 008H		13874	US	9 FEB	ELEMENTS NOT AVAILABLE					
1983 010A	COSMOS 1441	13818	USSR	16 FEB	96.4	81.1	591	584		
1983 010B		13819	USSR	16 FEB	96.7	81.1	639	562		
1983 015A	MOLNIYA 3-20	13875	USSR	11 MAR	718.0	64.1	38894	1469		
1983 015E		13882	USSR	11 MAR	731.9	64.4	39595	1456		
1983 016A	EKRAN 10	13878	USSR	12 MAR	1515.4	8.6	37476	37172		
1983 016F		14086	USSR	12 MAR	1424.4	8.1	35619	35496		
1983 019A	MOLNIYA 1-56	13890	USSR	16 MAR	720.3	64.1	39344	1132		
1983 019D		13897	USSR	16 MAR	732.7	64.1	39898	1189		
1983 020A	ASTRON	13901	USSR	23 MAR	5921.8	28.5	184523	19571		
1983 020D		20413	USSR	23 MAR	5822.8	27.9	184364	17305		
1983 021A	COSMOS 1447	13916	USSR	24 MAR	104.7	82.9	1009	953		
1983 021B		13917	USSR	24 MAR	104.6	82.9	997	954		
1983 022A	NOAA 8	13923	US	28 MAR	101.0	98.5	818	793		
1983 023A	COSMOS 1448	13949	USSR	30 MAR	104.7	83.0	1001	955		
1983 023B		13950	USSR	30 MAR	104.6	83.0	1004	947		
1983 025A	MOLNIYA 1-57	13964	USSR	2 APR	718.4	63.9	38778	1604		
1983 025D		13967	USSR	2 APR	699.2	64.3	37664	1772		
1983 026B	TDRS 1	13969	US	4 APR	1436.1	5.9	35800	35776		
1983 026C		13970	US	4 APR	1089.7	4.0	35318	22079		
1983 026D		13971	US	4 APR	534.7	26.0	30626	262		
1983 028A	RADUGA 12	13974	USSR	8 APR	1435.9	7.0	35786	35778		
1983 028F		13983	USSR	8 APR	1439.1	7.0	35957	35734		
1983 030A	RCA SATCOM VI	13984	US	11 APR	1436.1	0.0	35803	35769		
1983 030B		13985	US	11 APR	114.5	25.3	2568	295		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 031A	COSMOS 1452	13991	USSR	12 APR	100.6	74.1	799	775		
1983 031B		13992	USSR	12 APR	100.5	74.0	785	777		
1983 031D		14812	USSR	12 APR	100.8	74.1	808	780		
1983 037A	COSMOS 1455	14032	USSR	23 APR	96.9	82.5	622	596		
1983 037B		14033	USSR	23 APR	97.4	82.5	647	618		
1983 038A	COSMOS 1456	14034	USSR	25 APR	717.6	66.9	37404	2939		
1983 038E		14041	USSR	25 APR	707.3	66.7	37147	2689		
1983 038H		14297	USSR	25 APR	768.0	66.8	39127	3676		
1983 038J		14301	USSR	25 APR	789.5	67.0	43591	246		
1983 038K		14306	USSR	25 APR	720.6	64.3	39697	795		
1983 041A	GOES 6	14050	US	28 APR	1436.0	3.8	35799	35774		
1983 041B		14051	US	28 APR	115.6	25.4	2563	404		
1983 041C		14069	US	28 APR	1707.4	9.6	49359	32527		
1983 042A	COSMOS 1459	14057	USSR	6 MAY	104.6	83.0	1011	941		
1983 042B		14059	USSR	6 MAY	104.5	83.0	1002	938		
1983 044A	COSMOS 1461	14064	USSR	7 MAY	98.6	65.0	819	566		
1983 044B - 044FQ			USSR	7 MAY	SEE NOTE		39*			39*
1983 046A	COSMOS 1463	14075	USSR	19 MAY	93.5	82.8	636	258		
1983 047A	INTELSAT 5 F-6	14077	ITSO	19 MAY	1436.2	1.1	35801	35776		
1983 048A	COSMOS 1464	14084	USSR	24 MAY	104.8	82.9	1004	962		
1983 048B		14085	USSR	24 MAY	104.7	82.9	998	957		
1983 051B		14096	US	26 MAY	119.1	72.3	2520	757		
1983 053A	VENERA 15	14104	USSR	2 JUN	CIRCUM-VENEREAN ORBIT					
1983 054A	VENERA 16	14107	USSR	7 JUN	CIRCUM-VENEREAN ORBIT					
1983 056A		14112	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056B		14113	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056C		14143	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056D		14144	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056E		14145	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056F		14146	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056G		14180	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 056H		14181	US	9 JUN	ELEMENTS NOT AVAILABLE					
1983 058A	ECS 1	14128	ESA	16 JUN	1435.8	2.4	35812	35750		
1983 058B	OSCAR 10	14129	FRG	16 JUN	699.5	26.3	35541	3908		
1983 058C		14130	ESA	16 JUN	335.9	8.5	19964	290		
1983 058F		17331	ESA	16 JUN	116.4	7.6	2730	307		
1983 059B	ANIK C2	14133	CANADA	18 JUN	1436.0	0.5	35796	35776		35*
1983 059C	PALAPA B1	14134	INDNSA	18 JUN	1435.2	1.6	35789	35749		35*
1983 059D		14135	US	18 JUN	605.0	22.9	34306	326		
1983 059E		14136	US	18 JUN	623.1	25.4	35208	369		
1983 060C		14139	US	20 JUN	ELEMENTS NOT AVAILABLE					
1983 061A	COSMOS 1470	14147	USSR	22 JUN	97.0	82.5	630	601		
1983 061B		14148	USSR	22 JUN	97.4	82.5	650	617		
1983 063A		14154	US	27 JUN	100.6	82.0	820	754		
1983 063B		14155	US	27 JUN	100.5	82.0	815	750		
1983 063C		14222	US	27 JUN	99.7	82.4	761	726		
1983 063D		14223	US	27 JUN	100.8	81.7	843	753		
1983 065A	GALAXY 1	14158	US	28 JUN	1436.1	0.1	35795	35778		
1983 065C		14168	US	28 JUN	299.4	23.2	16670	222		
1983 066A	GORIZONT 7	14160	USSR	30 JUN	1464.2	6.6	36380	36290		

INTER-NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 066E		14167	USSR	30 JUN	171.0	46.5	7446	205		
1983 066F		15141	USSR	30 JUN	1475.2	6.8	36603	36491		
1983 067A	PROGNOZ 9	14163	USSR	1 JUL	CURRENT ELEMENTS NOT MAINTAINED					
1983 069A	COSMOS 1473	14171	USSR	6 JUL	114.4	74.0	1461	1392		
1983 069B	COSMOS 1474	14172	USSR	6 JUL	114.6	74.0	1461	1409		
1983 069C	COSMOS 1475	14173	USSR	6 JUL	114.7	74.0	1461	1426		
1983 069D	COSMOS 1476	14174	USSR	6 JUL	114.9	74.0	1461	1443		
1983 069E	COSMOS 1477	14175	USSR	6 JUL	115.1	74.0	1463	1459		
1983 069F	COSMOS 1478	14176	USSR	6 JUL	115.3	74.0	1479	1460		
1983 069G	COSMOS 1479	14177	USSR	6 JUL	115.5	74.0	1498	1460		
1983 069H	COSMOS 1480	14178	USSR	6 JUL	115.8	74.0	1518	1460		
1983 069J		14179	USSR	6 JUL	117.4	74.0	1671	1460		
1983 070A	COSMOS 1481	14182	USSR	8 JUL	707.3	67.3	36150	3684		
1983 070C		14191	USSR	8 JUL	707.9	67.3	36040	3827		
1983 070E		14192	USSR	8 JUL	708.9	67.3	36256	3658		
1983 070F		20412	USSR	8 JUL	705.8	67.5	36835	2925		
1983 072A		14189	US	14 JUL	717.9	63.7	20551	19811		
1983 072B		14190	US	14 JUL	371.8	64.1	20288	1209		
1983 073A	MOLNIYA 1-58	14199	USSR	19 JUL	617.9	63.9	35108	194		
1983 075A	COSMOS 1484	14207	USSR	24 JUL	96.2	97.6	601	549		
1983 075B		14208	USSR	24 JUL	96.8	97.6	634	581		
1983 075C		14209	USSR	24 JUL	96.6	97.6	625	562		
1983 075D		14229	USSR	24 JUL	97.1	97.7	650	593		
1983 075E		14631	USSR	24 JUL	96.4	97.6	605	571		
1983 075F		14928	USSR	24 JUL	96.9	97.6	633	582		
1983 077A	TELSTAR 3A	14234	US	28 JUL	1436.2	0.0	35798	35777		
1983 077C		14236	US	28 JUL	222.4	22.7	11319	245		
1983 078A		14237	US	31 JUL	ELEMENTS NOT AVAILABLE					
1983 078B		14238	US	31 JUL	ELEMENTS NOT AVAILABLE					
1983 079A	COSMOS 1486	14240	USSR	3 AUG	100.6	74.1	795	774		
1983 079B		14241	USSR	3 AUG	100.5	74.1	794	768		
1983 079C		14344	USSR	3 AUG	100.6	74.1	804	773		
1983 079D		14813	USSR	3 AUG	100.8	74.0	811	779		
1983 079E		15756	USSR	3 AUG	99.9	74.1	762	742		
1983 081A	CS-2B	14248	JAPAN	5 AUG	1457.4	3.7	36210	36193		
1983 084A	COSMOS 1490	14258	USSR	10 AUG	675.7	64.8	19168	19090		
1983 084B	COSMOS 1491	14259	USSR	10 AUG	668.4	64.7	19073	18816		
1983 084C	COSMOS 1492	14260	USSR	10 AUG	676.8	64.8	19159	19154		
1983 084F		14264	USSR	10 AUG	676.3	64.8	19160	19126		
1983 084G		14277	USSR	10 AUG	326.8	52.0	18355	319		
1983 084H		14278	USSR	10 AUG	325.9	52.2	18299	316		
1983 088A	RADUGA 13	14307	USSR	25 AUG	1466.8	6.6	36443	36328		
1983 088F		14333	USSR	25 AUG	1475.2	6.7	36618	36479		
1983 089B	INSAT 1B	14318	INDIA	31 AUG	1436.0	2.3	35799	35770		
1983 089C		14524	US	31 AUG	563.6	24.0	32207	238		
1983 090A	MOLNIYA 3-21	14313	USSR	30 AUG	717.0	64.4	38391	1923		
1983 090D		14319	USSR	30 AUG	731.3	64.3	39162	1855		
1983 091C - 091AC			USSR	31 AUG	SEE NOTE 38*					38*
1983 094A	KCA SATCOM VII	14328	US	8 SEP	1436.2	0.0	35798	35779		
1983 094B		14329	US	8 SEP	110.9	25.5	2254	283		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1983 LAUNCHES (CONT.)										
1983 093A	GALAXY 2	14365	US	22 SEP	1436.1	0.0	35796	35781		
1983 099A	COSMOS 1500	14372	USSR	28 SEP	97.0	82.5	626	599		
1983 099B		14373	USSR	28 SEP	97.4	82.5	648	618		
1983 100A	EKRAN 11	14377	USSR	30 SEP	1436.5	7.3	35804	35784		
1983 100F		14394	USSR	30 SEP	1425.1	7.3	35645	35498		
1983 103A	COSMOS 1503	14401	USSR	12 OCT	100.7	74.0	800	780		
1983 103B		14402	USSR	12 OCT	100.5	74.0	802	762		
1983 105A	INTELSAT 5 F-7	14421	ITSO	19 OCT	1436.1	1.5	35802	35770		
1983 108A	COSMOS 1506	14450	USSR	26 OCT	104.6	82.9	1009	945		
1983 108B		14451	USSR	26 OCT	104.5	82.9	996	947		
1983 109A	METEOR 2-10	14452	USSR	28 OCT	101.1	81.2	878	742		
1983 109B		14453	USSR	29 OCT	101.2	81.2	891	735		
1983 109C		14454	USSR	29 OCT	101.1	81.2	881	738		
1983 111A	COSMOS 1508	14483	USSR	11 NOV	107.2	82.9	1797	391		
1983 111B		14484	USSR	11 NOV	105.1	82.9	1627	370		
1983 113A		14506	US	18 NOV	101.1	98.4	821	799		
1983 113D		14609	US	18 NOV	95.3	98.6	543	527		
1983 113E		14610	US	18 NOV	98.5	98.5	691	677		
1983 114A	MOLNIYA 1-59	14516	USSR	23 NOV	717.2	64.2	38501	1826		
1983 114D		14520	USSR	23 NOV	699.2	64.3	37528	1903		
1983 115A	COSMOS 1510	14521	USSR	24 NOV	116.0	73.6	1522	1477		
1983 115B		14522	USSR	24 NOV	115.9	73.6	1518	1477		
1983 118A	GORIZONT 8	14532	USSR	30 NOV	1465.4	6.2	36477	36240		
1983 118F		14548	USSR	30 NOV	1436.4	6.2	35990	35595		
1983 120A	COSMOS 1513	14546	USSR	8 DEC	104.8	82.9	1013	955		
1983 120B		14547	USSR	8 DEC	104.6	82.9	1010	938		
1983 122A	COSMOS 1515	14551	USSR	15 DEC	96.9	82.5	625	599		
1983 122B		14552	USSR	15 DEC	97.4	82.5	647	620		
1983 123A	MOLNIYA 3-22	14570	USSR	21 DEC	714.6	64.8	39493	702		
1983 123D		14582	USSR	21 DEC	732.5	64.9	40010	1065		
1983 126A	COSMOS 1518	14587	USSR	28 DEC	714.0	67.0	37076	3093		
1983 126D		14596	USSR	28 DEC	705.4	66.9	36812	2930		
1983 127A	COSMOS 1519	14590	USSR	29 DEC	675.7	66.4	19184	19074		
1983 127B	COSMOS 1520	14591	USSR	29 DEC	675.7	66.4	19147	19111		
1983 127C	COSMOS 1521	14592	USSR	29 DEC	673.4	66.4	19153	18988		
1983 127F		14595	USSR	29 DEC	673.1	66.4	19154	18971		
1983 127G		14607	USSR	29 DEC	326.7	52.1	18223	445		
1983 127H		14608	USSR	29 DEC	331.4	51.6	18575	392		
1983 127J		21752	USSR	29 DEC	230.9	53.1	11628	548		
1983 127K		21753	USSR	29 DEC	261.2	52.3	13781	530		
1983 127L		21860	USSR	29 DEC	172.9	52.3	7483	325		
1984 LAUNCHES										
1984 001A	COSMOS 1522	14611	USSR	5 JAN	115.4	74.0	1490	1460		
1984 001B	COSMOS 1522	14612	USSR	5 JAN	114.4	74.0	1460	1393		
1984 001C	COSMOS 1524	14613	USSR	5 JAN	114.6	74.0	1460	1409		
1984 001D	COSMOS 1525	14614	USSR	5 JAN	114.7	74.0	1460	1425		
1984 001E	COSMOS 1526	14615	USSR	5 JAN	114.9	74.0	1460	1440		
1984 001F	COSMOS 1527	14616	USSR	5 JAN	115.1	74.0	1460	1456		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 001G	COSMOS 1528	14617	USSR	5 JAN	115.3	74.0	1474	1459		
1984 001H	COSMOS 1529	14618	USSR	5 JAN	115.6	74.0	1509	1459		
1984 001J		14619	USSR	5 JAN	117.5	74.0	1671	1467		
1984 003A	COSMOS 1531	14624	USSR	11 JAN	104.9	82.9	1005	978		
1984 003B		14625	USSR	11 JAN	104.8	82.9	1000	968		
1984 005A	BS-2A	14659	JAPAN	23 JAN	1453.8	3.5	36187	36077		
1984 008A	PRC 14	14670	PRC	29 JAN	162.1	36.1	6484	457		
1984 009A		14675	US	31 JAN	ELEMENTS NOT AVAILABLE					
1984 009C		14677	US	31 JAN	ELEMENTS NOT AVAILABLE					
1984 010A	COSMOS 1535	14679	USSR	2 FEB	104.7	83.0	1012	951		
1984 010B		14680	USSR	2 FEB	104.6	83.0	1003	949		
1984 011E		14693	US	6 FEB	96.0	28.1	865	267		
1984 011F		14694	US	3 FEB	98.1	27.7	1037	299		
1984 012A		14690	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012B		14691	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012C		14728	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012D		14729	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012F		14795	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012J		15347	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012K		15348	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 012L		15349	US	5 FEB	ELEMENTS NOT AVAILABLE					
1984 013A	COSMOS 1536	14699	USSR	8 FEB	97.1	82.5	634	606		
1984 013B		14700	USSR	8 FEB	97.4	82.5	649	618		
1984 016A	RADUGA 14	14725	USSR	15 FEB	1436.5	6.1	35819	35769		
1984 016F		17874	USSR	15 FEB	1435.8	6.2	35934	35628		
1984 019A	COSMOS 1538	14759	USSR	21 FEB	100.6	74.0	800	770		
1984 019B		14760	USSR	21 FEB	100.5	74.0	801	762		
1984 019C		15785	USSR	21 FEB	100.1	74.0	772	755		
1984 019D		18519	USSR	21 FEB	100.1	74.0	773	754		
1984 021A	LANDSAT 5	14780	US	1 MAR	98.7	98.1	709	688		
1984 021B	UOSAT 2	14781	UK	1 MAR	98.0	97.9	671	654		
1984 022A	COSMOS 1540	14783	USSR	2 MAR	1436.3	6.9	35811	35768		
1984 022F		14948	USSR	2 MAR	1441.9	6.9	35998	35801		
1984 023A	INTELSAT 5 F-8	14786	ITSO	5 MAR	1436.1	0.9	35803	35770		
1984 023B		14787	ESA	5 MAR	554.3	11.0	31648	298		
1984 024A	COSMOS 1541	14790	USSR	6 MAR	717.7	65.9	36492	3858		
1984 024D		14796	USSR	6 MAR	709.7	65.9	36201	3753		
1984 027A	COSMOS 1544	14819	USSR	15 MAR	96.9	82.5	623	596		
1984 027B		14820	USSR	15 MAR	97.4	82.5	649	617		
1984 028A	EKRAN 12	14821	USSR	16 MAR	1499.1	7.6	37055	36967		
1984 028D		14828	USSR	16 MAR	624.7	46.6	35418	238		
1984 028F		15139	USSR	16 MAR	1419.7	7.3	35538	35392		
1984 029A	MOLNIYA 1-60	14825	USSR	16 MAR	717.4	64.7	39292	1044		
1984 029D		14830	USSR	16 MAR	731.0	64.9	39855	1148		
1984 031A	COSMOS 1546	14867	USSR	29 MAR	1436.0	6.0	35897	35671		
1984 031D		14887	USSR	29 MAR	566.9	45.3	32280	345		
1984 031F		14951	USSR	29 MAR	1448.4	6.1	36096	35956		
1984 033A	COSMOS 1547	14884	USSR	4 APR	719.0	67.5	36627	3786		
1984 033D		14894	USSR	4 APR	706.5	67.4	36222	3576		
1984 035A	PRC 15	14899	PRC	8 APR	1437.4	4.7	35837	35788		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 035B		14900	PRC	8 APR	624.6	30.7	35258	395		
1984 037A		14930	US	14 APR	ELEMENTS NOT AVAILABLE					
1984 037B		14931	US	14 APR	ELEMENTS NOT AVAILABLE					
1984 041A	GORIZONT 9	14940	USSR	22 APR	1436.0	5.8	35796	35774		
1984 041D		14943	USSR	22 APR	1460.1	6.0	36332	36177		
1984 043A	COSMOS 1550	14965	USSR	11 MAY	104.9	83.0	1007	971		
1984 043B		14966	USSR	11 MAY	104.8	83.0	995	972		
1984 046A	COSMOS 1553	14973	USSR	17 MAY	104.7	82.9	1003	958		
1984 046B		14974	USSR	17 MAY	104.6	82.9	1007	942		
1984 047A	COSMOS 1554	14977	USSR	19 MAY	675.7	66.4	19170	19088		
1984 047B	COSMOS 1555	14978	USSR	19 MAY	675.7	66.4	19156	19102		
1984 047C	COSMOS 1556	14979	USSR	19 MAY	676.3	66.4	19160	19128		
1984 047F		14984	USSR	19 MAY	675.5	66.4	19169	19079		
1984 047G		15053	USSR	19 MAY	332.7	52.0	18701	349		
1984 047H		15054	USSR	19 MAY	313.5	52.0	17494	325		
1984 049A	SPACENET 1	14985	US	23 MAY	1436.0	0.0	35789	35782		
1984 052A	COSMOS 1559	14998	USSR	28 MAY	115.7	74.0	1508	1468		
1984 052B	COSMOS 1560	14999	USSR	28 MAY	115.5	74.0	1490	1468		
1984 052C	COSMOS 1561	15000	USSR	28 MAY	115.4	74.0	1483	1459		
1984 052D	COSMOS 1562	15001	USSR	28 MAY	115.2	74.0	1475	1451		
1984 052E	COSMOS 1563	15002	USSR	28 MAY	115.0	74.0	1474	1436		
1984 052F	COSMOS 1564	15003	USSR	28 MAY	114.8	74.0	1473	1422		
1984 052G	COSMOS 1565	15004	USSR	28 MAY	114.7	74.0	1474	1406		
1984 052H	COSMOS 1566	15005	USSR	28 MAY	114.5	74.0	1472	1392		
1984 052J		15006	USSR	28 MAY	117.6	74.0	1676	1473		
1984 055A	COSMOS 1569	15027	USSR	6 JUN	717.8	65.9	36918	3438		
1984 055D		15030	USSR	6 JUN	706.9	66.2	36731	3085		
1984 056A	COSMOS 1570	15031	USSR	8 JUN	100.7	74.1	801	781		
1984 056B		15032	USSR	8 JUN	100.6	74.1	798	771		
1984 056C		15033	USSR	8 JUN	100.7	74.1	806	781		
1984 056D		15757	USSR	8 JUN	95.7	74.0	553	552		
1984 059A		15039	US	13 JUN	717.9	63.5	20282	20080		
1984 059B		15040	US	13 JUN	365.4	62.0	20748	357		
1984 062A	COSMOS 1574	15055	USSR	21 JUN	104.8	83.0	1003	964		
1984 062B		15056	USSR	21 JUN	104.7	83.0	995	960		
1984 063A	RADUGA 15	15057	USSR	22 JUN	1437.5	5.8	35841	35788		
1984 063E		15076	USSR	22 JUN	373.5	46.6	21426	175		
1984 063F		15693	USSR	22 JUN	1394.2	5.6	35038	34885		
1984 065C		15071	US	25 JUN	ELEMENTS NOT AVAILABLE					
1984 067A	COSMOS 1577	15077	USSR	27 JUN	104.7	83.0	1006	954		
1984 067B		15078	USSR	27 JUN	104.6	83.0	992	956		
1984 068A	COSMOS 1578	15080	USSR	28 JUN	93.9	50.6	669	256		
1984 069A	COSMOS 1579	15085	USSR	29 JUN	103.9	65.0	980	904		
1984 069D		15330	USSR	29 JUN	103.6	65.0	961	894		
1984 069E		19453	USSR	29 JUN	102.7	65.8	942	827		
1984 071A	COSMOS 1581	15095	USSR	3 JUL	721.1	68.0	36694	3824		
1984 071D		15098	USSR	3 JUL	705.6	67.6	36154	3599		
1984 072A	METEOR 2-11	15099	USSR	5 JUL	104.0	82.5	955	937		
1984 072B		15100	USSR	5 JUL	104.0	82.5	954	938		
1984 078A	GORIZONT 10	15144	USSR	1 AUG	1436.0	5.5	35790	35778		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 078F		15181	USSR	1 AUG	1436.0	5.5	35888	35680		
1984 079A	COSMOS 1586	15147	USSR	2 AUG	718.9	65.0	36881	3525		
1984 079D		15156	USSR	2 AUG	705.7	65.3	36427	3330		
1984 080A	GMS 3	15152	JAPAN	2 AUG	1436.0	3.3	35788	35782		
1984 080C		15157	JAPAN	2 AUG	229.6	28.8	11882	201		
1984 081A	ECS 2	15158	ESA	4 AUG	1436.1	1.5	35803	35770		
1984 081B	TELECOM 1A	15159	FRANCE	4 AUG	1436.1	1.4	35789	35785		
1984 081D		15166	ESA	4 AUG	598.1	7.0	33593	678		
1984 081E		20674	ESA	4 AUG	600.6	7.1	33669	732		
1984 083B - 083AX			USSR	7 AUG	SEE NOTE		41*			41*
1984 084A	COSMOS 1589	15171	USSR	8 AUG	115.9	82.6	1499	1490		
1984 084B		15172	USSR	8 AUG	115.8	82.6	1498	1488		
1984 085A	MOLNIYA 1-61	15182	USSR	10 AUG	716.4	64.1	38853	1430		
1984 085D		15188	USSR	10 AUG	731.0	64.4	39586	1415		
1984 088A	CCE	15199	US	16 AUG	939.5	3.1	49762	1030		
1984 088B	IRM	15200	FRG	16 AUG	2653.4	27.0	113818	402		
1984 088C	UKS	15201	UK	16 AUG	2659.6	26.9	113417	1002		
1984 088D		15202	US	16 AUG	133.9	28.9	4036	546		
1984 088E		15205	US	16 AUG	133.0	28.7	3952	551		
1984 088F		15206	US	16 AUG	920.5	26.9	49548	384		
1984 088G		19008	US	16 AUG	131.8	28.7	3852	550		
1984 088H		19599	US	16 AUG	133.0	28.7	3955	551		
1984 089A	MOLNIYA 1-62	15214	USSR	24 AUG	735.2	63.9	39965	1243		
1984 089D		15223	USSR	24 AUG	739.0	64.0	39664	1730		
1984 090A	EKRAN 13	15219	USSR	24 AUG	1499.7	6.8	37093	36951		
1984 090F		17875	USSR	24 AUG	1422.0	6.4	35581	35440		
1984 091A		15226	US	28 AUG	ELEMENTS NOT AVAILABLE					
1984 091B		15227	US	28 AUG	ELEMENTS NOT AVAILABLE					
1984 093B	SBS 4	15235	US	31 AUG	1436.1	0.0	35796	35778		35*
1984 093C	SYNCOM IV-2	15236	US	31 AUG	1436.0	3.3	35789	35781		35*
1984 093D	TELSTAR 3C	15237	US	1 SEP	1436.2	0.1	35802	35773		35*
1984 093E		15244	US	31 AUG	260.4	27.2	13947	309		
1984 093F		15245	US	31 AUG	599.1	23.0	33989	335		
1984 093G		15246	US	1 SEP	641.8	24.9	36148	389		
1984 095A	COSMOS 1593	15259	USSR	4 SEP	675.7	64.8	19176	19082		
1984 095B		15260	USSR	4 SEP	677.2	64.7	19190	19143		
1984 095C		15261	USSR	4 SEP	675.7	64.7	19181	19077		
1984 095F		15264	USSR	4 SEP	675.9	64.7	19164	19103		
1984 095G		15265	USSR	4 SEP	328.4	52.1	18401	375		
1984 095H		15266	USSR	4 SEP	331.5	51.9	18599	377		
1984 096A	COSMOS 1596	15267	USSR	7 SEP	718.0	67.7	36675	3687		
1984 096D		15270	USSR	7 SEP	703.2	67.6	36179	3453		
1984 097A		15271	US	8 SEP	ELEMENTS NOT AVAILABLE					
1984 097B		15272	US	8 SEP	369.2	63.7	20438	900		
1984 100A	COSMOS 1598	15292	USSR	13 SEP	1436.1	0.0	35796	35779		
1984 100B		15293	USSR	13 SEP	104.8	82.9	998	966		
1984 101A	GALAXY 3	15308	US	21 SEP	1436.1	0.0	35798	35776		
1984 1043 - 104AF			USSR	27 SEP	SEE NOTE		40*			40*
1984 105A	COSMOS 1602	15331	USSR	28 SEP	97.0	82.5	631	602		
1984 105B		15332	USSR	28 SEP	97.4	82.5	651	616		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1984 LAUNCHES (CONT.)										
1984 106A	COSMOS 1603	15333	USSR	28 SEP	101.9	71.0	862	832		
1984 106C		15335	USSR	28 SEP	101.4	66.6	832	819		
1984 106F		15338	USSR	28 SEP	101.7	66.6	847	831		
1984 106G		17358	USSR	28 SEP	101.9	71.0	849	842		
1984 107A	COSMOS 1604	15350	USSR	4 OCT	717.2	67.5	36527	3800		
1984 107D		15355	USSR	4 OCT	708.1	67.4	36253	3621		
1984 108B	ERBS	15354	US	5 OCT	96.5	57.0	602	581		
1984 109A	COSMOS 1605	15359	USSR	11 OCT	104.7	82.9	1013	947		
1984 109B		15360	USSR	11 OCT	104.6	82.9	1007	946		
1984 110A		15362	US	12 OCT	108.9	89.9	1200	1148		
1984 111A	COSMOS 1606	15369	USSR	18 OCT	96.9	82.5	628	596		
1984 111B		15370	USSR	18 OCT	97.4	82.5	650	614		
1984 112A	COSMOS 1607	15378	USSR	31 OCT	104.1	65.0	977	925		
1984 112C		15503	USSR	31 OCT	103.8	65.0	956	916		
1984 113B	ANIK D2	15383	CANADA	9 NOV	1436.0	0.0	35794	35778		35*
1984 113C	SYNCOM IV-1	15384	US	10 NOV	1436.0	2.3	35879	35693		35*
1984 113D		15387	US	9 NOV	618.9	25.1	35013	346		
1984 113E		15390	US	10 NOV	260.8	27.1	13977	311		
1984 114A	SPACENET 2	15385	US	10 NOV	1436.1	0.0	35790	35784		
1984 114B	MARECS B2	15386	ESA	10 NOV	1436.0	2.8	35798	35772		
1984 114C		15388	ESA	10 NOV	605.4	7.1	34318	338		
1984 115A	NATO III-D	15391	NATO	14 NOV	1436.1	0.8	35797	35775		
1984 115B		15392	US	14 NOV	115.9	21.5	2313	674		
1984 115C		15402	US	14 NOV	636.6	23.4	35869	402		
1984 118A	COSMOS 1610	15398	USSR	15 NOV	104.8	82.9	1010	961		
1984 118B		15399	USSR	15 NOV	104.7	82.9	1003	954		
1984 122A		15423	US	4 DEC	ELEMENTS NOT AVAILABLE					
1984 123A	NOAA 9	15427	US	12 DEC	101.8	99.1	858	837		
1984 123B		15440	US	12 DEC	98.5	99.0	690	686		
1984 123C		15441	US	12 DEC	96.2	99.0	579	573		
1984 124A	MOLNIYA 1-63	15429	USSR	14 DEC	717.5	63.6	38888	1453		
1984 124H		15439	USSR	14 DEC	733.4	64.0	39495	1625		
1984 125A	VEGA 1	15432	USSR	15 DEC	HELIOCENTRIC ORBIT					
1984 125D		15447	USSR	15 DEC	HELIOCENTRIC ORBIT					
1984 128A	VEGA 2	15449	USSR	21 DEC	HELIOCENTRIC ORBIT					
1984 128B		15450	USSR	21 DEC	HELIOCENTRIC ORBIT					
1984 129A		15453	US	22 DEC	ELEMENTS NOT AVAILABLE					
1984 129B		15454	US	22 DEC	ELEMENTS NOT AVAILABLE					
1985 LAUNCHES										
1985 001A	MS-T5	15464	JAPAN	7 JAN	HELIOCENTRIC ORBIT					
1985 001B		15465	JAPAN	7 JAN	HELIOCENTRIC ORBIT					
1985 003A	COSMOS 1617	15469	USSR	15 JAN	114.0	82.6	1413	1408		
1985 003B	COSMOS 1618	15470	USSR	15 JAN	114.0	82.6	1411	1404		
1985 003C	COSMOS 1619	15471	USSR	15 JAN	113.7	82.6	1412	1379		
1985 003D	COSMOS 1620	15472	USSR	15 JAN	113.8	82.6	1411	1387		
1985 003E	COSMOS 1621	15473	USSR	15 JAN	113.8	82.6	1411	1392		
1985 003F	COSMOS 1622	15474	USSR	15 JAN	113.9	82.6	1411	1397		
1985 003G		15475	USSR	15 JAN	114.7	82.6	1471	1410		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 004A	MOLNIYA 3-23	15476	USSR	16 JAN	717.5	64.8	38845	1496		
1985 004D		15481	USSR	16 JAN	731.7	65.0	39362	1676		
1985 006A	COSMOS 1624	15482	USSR	17 JAN	100.6	74.0	798	777		
1985 006B		15483	USSR	17 JAN	100.5	74.0	795	765		
1985 006C		15490	USSR	17 JAN	100.3	74.0	775	769		
1985 006D		15491	USSR	17 JAN	100.7	74.0	808	777		
1985 007A	GORIZONT 11	15484	USSR	18 JAN	1436.1	5.1	35800	35773		
1985 007D		15487	USSR	18 JAN	1397.7	4.9	35108	34957		
1985 007F		15489	USSR	18 JAN	397.6	47.1	22854	212		
1985 009A	COSMOS 1626	15494	USSR	24 JAN	96.9	82.5	622	595		
1985 009B		15495	USSR	24 JAN	97.3	82.5	647	615		
1985 010B		15543	US	24 JAN	ELEMENTS NOT AVAILABLE					35*
1985 010C		15544	US	24 JAN	ELEMENTS NOT AVAILABLE					
1985 010D		15545	US	24 JAN	ELEMENTS NOT AVAILABLE					
1985 011A	COSMOS 1627	15505	USSR	1 FEB	104.8	82.9	1013	953		
1985 011B		15506	USSR	1 FEB	104.7	82.9	1001	955		
1985 013A	METEOR 2-12	15516	USSR	6 FEB	103.9	82.5	956	931		
1985 013B		15517	USSR	6 FEB	103.9	82.5	956	933		
1985 014A		15546	US	8 FEB	ELEMENTS NOT AVAILABLE					
1985 014B		15547	US	8 FEB	ELEMENTS NOT AVAILABLE					
1985 015A	ARABSAT 1	15560	SA	8 FEB	1435.2	1.2	35789	35750		
1985 015B	S8TS 1	15561	BRAZIL	8 FEB	1436.2	0.0	35811	35766		
1985 015C		15562	ESA	8 FEB	582.6	7.1	33131	324		
1985 016A	COSMOS 1629	15574	USSR	21 FEB	1437.7	5.2	35839	35795		
1985 016F		15581	USSR	21 FEB	1448.8	5.3	36147	35920		
1985 020A	COSMOS 1633	15592	USSR	5 MAR	96.9	82.5	618	599		
1985 021A	GEOSAT	15595	US	13 MAR	100.4	108.1	780	776		
1985 021B		15596	US	13 MAR	100.3	108.1	797	745		
1985 021C		15613	US	13 MAR	94.5	108.5	505	482		
1985 021D		15614	US	13 MAR	99.4	108.2	746	711		
1985 021E		15615	US	13 MAR	100.4	107.8	815	741		
1985 021F		15616	US	13 MAR	100.4	107.5	847	706		
1985 022A	COSMOS 1634	15597	USSR	14 MAR	104.7	82.9	1007	955		
1985 022B		15598	USSR	14 MAR	104.6	82.9	992	960		
1985 023A	COSMOS 1635	15617	USSR	21 MAR	115.8	74.0	1510	1472		
1985 023B	COSMOS 1636	15618	USSR	21 MAR	115.6	74.1	1492	1472		
1985 023C	COSMOS 1637	15619	USSR	21 MAR	115.4	74.1	1486	1462		
1985 023D	COSMOS 1638	15620	USSR	21 MAR	115.2	74.1	1479	1453		
1985 023E	COSMOS 1639	15621	USSR	21 MAR	115.1	74.1	1478	1438		
1985 023F	COSMOS 1640	15622	USSR	21 MAR	114.9	74.1	1478	1424		
1985 023G	COSMOS 1641	15623	USSR	21 MAR	114.8	74.1	1478	1409		
1985 023H	COSMOS 1642	15624	USSR	21 MAR	114.6	74.1	1476	1396		
1985 023J		15625	USSR	21 MAR	118.0	74.1	1709	1474		
1985 024A	EKRAN 14	15626	USSR	22 MAR	1519.1	6.3	37452	37339		
1985 024D		15630	USSR	22 MAR	1422.6	6.0	35583	35458		
1985 025A	INTELSAT VF10	15629	ITSO	22 MAR	1436.2	0.0	35813	35764		
1985 025B		15631	US	22 MAR	375.5	23.0	21519	207		
1985 028B	ANIK C1	15642	CANADA	13 APR	1436.0	0.0	35795	35777		35*
1985 028C	SYNCOM IV-3	15643	US	12 APR	1436.0	2.6	35805	35768		35*
1985 028D		15644	US	13 APR	594.0	23.5	33725	335		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 028E		16229	US	12 APR	275.5	27.0	14944	349		
1985 030D - 030AA			USSR	18 APR	SEE NOTE		43*			43*
1985 033A	PROGNOZ 10	15661	USSR	26 APR	5783.7	76.8	194734	5975		
1985 033D		15664	USSR	26 APR	5784.8	65.0	200315	420		
1985 035A	GSTAR 1	15677	US	8 MAY	1436.0	0.0	35788	35784		
1985 035B	TELECOM 1B	15678	FRANCE	8 MAY	1436.1	3.8	35802	35772		
1985 035C		15679	ESA	8 MAY	483.0	7.2	27749	275		
1985 035D		15680	ESA	8 MAY	304.7	6.8	16435	804		
1985 037A	COSMOS 1650	15697	USSR	17 MAY	675.7	64.8	19177	19081		
1985 037B	COSMOS 1651	15698	USSR	17 MAY	675.6	64.8	19145	19109		
1985 037C	COSMOS 1652	15699	USSR	17 MAY	675.8	64.8	19152	19112		
1985 037F		15702	USSR	17 MAY	675.0	64.8	19170	19053		
1985 037G		15714	USSR	17 MAY	333.9	52.1	18756	372		
1985 037H		15715	USSR	17 MAY	330.8	52.1	18583	348		
1985 040A	MOLNIYA 3-24	15738	USSR	29 MAY	718.0	64.0	39331	1032		
1985 040D		15741	USSR	29 MAY	732.2	64.1	39696	1368		
1985 041A	COSMOS 1655	15751	USSR	30 MAY	105.0	82.9	1012	973		
1985 041B		15752	USSR	30 MAY	104.9	83.0	1006	970		
1985 042A	COSMOS 1656	15755	USSR	30 MAY	101.5	71.1	854	800		
1985 042D		15772	USSR	30 MAY	101.4	71.1	853	798		
1985 042E		15773	USSR	30 MAY	101.1	66.6	841	780		
1985 042F		15774	USSR	30 MAY	101.2	66.6	835	798		
1985 042G		18764	USSR	30 MAY	100.1	66.6	844	683		
1985 042H		18765	USSR	30 MAY	101.2	66.6	826	804		
1985 042J		18766	USSR	30 MAY	102.6	66.6	935	827		
1985 042K		18767	USSR	30 MAY	104.3	66.6	1091	832		
1985 042L		18819	USSR	30 MAY	101.9	66.6	885	810		
1985 045A	COSMOS 1658	15808	USSR	11 JUN	718.0	65.4	37017	3346		
1985 045D		15811	USSR	11 JUN	709.3	65.8	36703	3229		
1985 047A	COSMOS 1660	15821	USSR	14 JUN	116.0	73.6	1523	1480		
1985 047B		15822	USSR	14 JUN	116.0	73.6	1519	1479		
1985 048B	MORELOS A	15824	MEXICO	17 JUN	1436.1	0.0	35796	35777		35*
1985 048C	ARABSAT 1B	15825	SA	18 JUN	1436.1	0.4	35812	35761		35*
1985 048D	TELSTAR 3D	15826	US	19 JUN	1436.1	0.1	35814	35759		35*
1985 048F		15832	US	17 JUN	626.2	25.3	35329	402		
1985 048G		15836	US	18 JUN	619.2	26.7	34934	435		
1985 048H		15837	US	18 JUN	652.2	25.5	36616	450		
1985 049A	COSMOS 1661	15827	USSR	18 JUN	718.4	67.0	37001	3385		
1985 049D		15830	USSR	18 JUN	724.8	67.6	37434	3264		
1985 055A	INTELSAT VA F11	15873	ITSO	30 JUN	1436.0	0.0	35805	35767		
1985 055B		15874	US	30 JUN	548.2	23.0	31260	356		
1985 056A	GIOTTO	15875	ESA	2 JUL	HELIOCENTRIC ORBIT					
1985 056B		15876	ESA	2 JUL	498.2	8.1	28592	288		
1985 056C		17255	ESA	2 JUL	598.8	8.5	33993	314		
1985 056D		17325	ESA	2 JUL	558.5	7.5	31886	287		
1985 056E		17332	ESA	2 JUL	448.3	7.7	25647	400		
1985 058A	COSMOS 1666	15889	USSR	8 JUL	97.0	82.5	628	598		
1985 058B		15890	USSR	8 JUL	97.4	82.5	649	618		
1985 058C		19241	USSR	8 JUL	96.7	82.5	614	583		
1985 061A	MOLNIYA 3-25	15909	USSR	17 JUL	717.4	64.5	39179	1158		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 061D		15916	USSR	17 JUL	737.8	64.5	40306	1033		
1985 064A	COSMOS 1670	15930	USSR	1 AUG	104.1	64.9	987	913		
1985 066A	NNSS 30300	15935	US	3 AUG	107.9	89.9	1254	1001		
1985 066B	NNSS 30240	15936	US	3 AUG	107.9	89.9	1254	1000		
1985 066C		15938	US	3 AUG	107.9	89.9	1255	1001		
1985 066D		15950	US	3 AUG	106.7	89.9	1186	961		
1985 066E		15951	US	3 AUG	106.9	89.9	1193	969		
1985 066F		16020	US	3 AUG	107.5	90.2	1219	1005		
1985 066G		17164	US	3 AUG	108.2	89.3	1296	987		
1985 066H		21878	US	3 AUG	107.8	89.9	1251	1001		
1985 069A	COSMOS 1674	15944	USSR	8 AUG	96.9	82.5	624	599		
1985 069B		15945	USSR	8 AUG	97.4	82.5	647	617		
1985 070A	RADUGA 16	15946	USSR	9 AUG	1437.2	4.8	35820	35795		
1985 070F		15963	USSR	8 AUG	1472.4	5.0	36551	36435		
1985 071A	COSMOS 1675	15952	USSR	12 AUG	717.8	67.5	37199	3153		
1985 071D		15955	USSR	12 AUG	708.3	67.3	36777	3107		
1985 073A	PLANET A	15967	JAPAN	18 AUG	HELIOCENTRIC ORBIT					
1985 073C		15969	JAPAN	18 AUG	HELIOCENTRIC ORBIT					
1985 074A	MOLNIYA 1-64	15977	USSR	22 AUG	717.8	65.2	38707	1646		
1985 074D		15983	USSR	22 AUG	732.3	65.1	39466	1603		
1985 075A	COSMOS 1677	15986	USSR	23 AUG	103.9	64.7	973	907		
1985 076B	AUSSAT 1	15993	AUSTRL	27 AUG	1436.2	0.0	35805	35770		35*
1985 076C	ASC 1	15994	US	27 AUG	1436.0	0.0	35793	35779		35*
1985 076D	SYNCOM IV-4	15995	US	29 AUG	1437.7	2.0	35835	35802		35*
1985 076E		15996	US	27 AUG	631.5	25.9	35585	421		
1985 076F		16001	US	29 AUG	278.4	27.4	15106	383		
1985 076G		16007	US	29 AUG	629.5	26.5	35447	457		
1985 077K		16389	USSR	29 AUG	104.8	71.0	1124	841		
1985 077K		18608	USSR	29 AUG	100.3	74.0	780	760		
1985 077L		16390	USSR	29 AUG	105.1	71.0	1152	841		
1985 077M		16391	USSR	29 AUG	104.7	71.0	1124	839		
1985 077N		16392	USSR	29 AUG	104.9	71.0	1139	839		
1985 079A	COSMOS 1680	16011	USSR	4 SEP	100.6	74.1	798	776		
1985 079B		16012	USSR	4 SEP	100.5	74.1	791	770		
1985 079C		17754	USSR	4 SEP	100.7	74.0	805	776		
1985 082A - 082Z			USSR	19 SEP	SEE NOTE		42*			42*
1985 084A	COSMOS 1684	16064	USSR	24 SEP	717.6	64.6	36757	3586		
1985 084D		16070	USSR	24 SEP	705.9	65.2	36386	3382		
1985 087A	INTELSAT VA F-12	16101	ITSO	29 SEP	1436.2	0.0	35805	35773		
1985 087B		16102	US	29 SEP	511.5	23.1	29350	265		
1985 088A	COSMOS 1687	16103	USSR	30 SEP	718.5	66.7	36762	3628		
1985 088D		16106	USSR	30 SEP	703.6	66.9	36365	3286		
1985 090A	COSMOS 1689	16110	USSR	3 OCT	95.3	97.7	563	506		
1985 090B		16111	USSR	3 OCT	96.5	97.7	626	551		
1985 091A	MOLNIYA 3-26	16112	USSR	3 OCT	719.1	64.6	38072	2346		
1985 091D		16125	USSR	3 OCT	734.0	64.8	38624	2528		
1985 092B		16116	US	3 OCT	ELEMENTS NOT AVAILABLE					35*
1985 092C		16117	US	3 OCT	ELEMENTS NOT AVAILABLE					35*
1985 092D		16118	US	3 OCT	ELEMENTS NOT AVAILABLE					
1985 092F		16119	US	3 OCT	ELEMENTS NOT AVAILABLE					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 093A		16129	US	9 OCT	718.0	64.2	20512	19850		
1985 093B		16137	US	9 OCT	368.2	63.7	20244	1033		
1985 094A	COSMOS 1690	16138	USSR	9 OCT	113.7	82.6	1414	1378		
1985 094B	COSMOS 1691	16139	USSR	9 OCT	114.0	82.6	1414	1408		
1985 094C	COSMOS 1692	16140	USSR	9 OCT	113.8	82.6	1415	1385		
1985 094D	COSMOS 1693	16141	USSR	9 OCT	113.8	82.6	1415	1389		
1985 094E	COSMOS 1694	16142	USSR	9 OCT	113.9	82.6	1415	1395		
1985 094F	COSMOS 1695	16143	USSR	9 OCT	114.0	82.6	1415	1401		
1985 094G		16144	USSR	9 OCT	114.7	82.6	1467	1413		
1985 094K		16266	USSR	9 OCT	114.0	82.6	1427	1390		
1985 094L		16267	USSR	9 OCT	112.9	82.6	1429	1285		
1985 094M		16268	USSR	9 OCT	114.9	82.7	1515	1388		
1985 094N		16269	USSR	9 OCT	114.1	82.6	1424	1401		
1985 094P		16270	USSR	9 OCT	113.7	82.7	1601	1190		
1985 094Q		16271	USSR	9 OCT	114.0	82.6	1414	1402		
1985 094R		16272	USSR	9 OCT	113.4	82.6	1418	1347		
1985 094S		17168	USSR	9 OCT	113.1	82.6	1390	1344		
1985 094U		18777	USSR	9 OCT	114.0	82.6	1412	1410		
1985 097A	COSMOS 1697	16181	USSR	22 OCT	101.9	71.0	851	845		
1985 097B		16182	USSR	22 OCT	101.7	71.0	843	835		
1985 098A	COSMOS 1698	16183	USSR	22 OCT	718.2	65.9	36759	3615		
1985 098C		16186	USSR	22 OCT	707.9	66.0	36404	3459		
1985 099A	MOLNIYA 1-65	16187	USSR	23 OCT	717.6	64.7	38282	2061		
1985 099E		16197	USSR	23 OCT	698.0	64.6	37344	2030		
1985 100A	METEOR 3	16191	USSR	24 OCT	109.3	82.5	1207	1179		
1985 100B		16194	USSR	24 OCT	110.2	82.5	1245	1222		
1985 102A	COSMOS 1700	16199	USSR	25 OCT	1435.6	4.5	35803	35748		
1985 102D		16214	USSR	25 OCT	1431.1	4.4	35784	35591		
1985 103A	MOLNIYA 1-66	16220	USSR	28 OCT	717.6	64.2	39368	975		
1985 103D		16223	USSR	28 OCT	701.0	64.3	38371	1154		
1985 105A	COSMOS 1701	16235	USSR	9 NOV	718.6	67.2	37289	3104		
1985 105D		16243	USSR	9 NOV	706.2	67.3	36796	2985		
1985 107A	RADUGA 17	16250	USSR	15 NOV	1436.1	4.6	35803	35769		
1985 107F		16339	USSR	15 NOV	1477.0	4.7	36674	36492		
1985 108A	COSMOS 1703	16262	USSR	22 NOV	97.0	82.5	625	601		
1985 108B		16263	USSR	22 NOV	97.4	82.5	650	619		
1985 109B	MORELOS B	16274	MEXICO	27 NOV	1436.1	0.0	35788	35785		35*
1985 109C	AUSSAT 2	16275	AUSTRL	27 NOV	1436.2	0.0	35798	35776		35*
1985 109D	SATCOM KU2	16276	US	28 NOV	1436.2	0.0	35794	35782		35*
1985 109F		16293	US	27 NOV	638.2	25.4	36001	352		
1985 109G		16294	US	27 NOV	634.7	25.7	35834	340		
1985 109H		16295	US	28 NOV	617.2	26.2	34885	381		
1985 110A	COSMOS 1704	16291	USSR	28 NOV	104.8	82.9	1005	960		
1985 110B		16292	USSR	28 NOV	104.6	82.9	995	954		
1985 113A	COSMOS 1707	16326	USSR	12 DEC	97.0	82.5	629	599		
1985 113B		16327	USSR	12 DEC	97.4	82.5	649	618		
1985 116A	COSMOS 1709	16368	USSR	19 DEC	104.8	82.9	1010	956		
1985 116B		16369	USSR	19 DEC	104.6	82.9	1003	948		
1985 117A	MOLNIYA 3-27	16393	USSR	24 DEC	712.7	63.8	38529	1576		
1985 117F		16402	USSR	24 DEC	732.6	63.7	39292	1792		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1985 LAUNCHES (CONT.)										
1985 118A	COSMOS 1710	16396	USSR	24 DEC	675.7	66.1	19146	19111		
1985 118B	COSMOS 1711	16397	USSR	24 DEC	675.7	66.2	19151	19107		
1985 118C	COSMOS 1712	16398	USSR	24 DEC	676.3	66.1	19153	19134		
1985 118F		16404	USSR	24 DEC	675.5	66.1	19130	19118		
1985 118K		16445	USSR	24 DEC	340.3	65.3	18930	607		
1985 118L		16446	USSR	24 DEC	339.9	65.2	18952	560		
1985 119A	METEOR 2-13	16408	USSR	26 DEC	103.9	82.5	956	933		
1985 119B		16409	USSR	26 DEC	104.0	82.5	956	934		
1986 LAUNCHES										
1986 002A	COSMOS 1716	16449	USSR	9 JAN	115.5	74.0	1489	1462		
1986 002B	COSMOS 1717	16450	USSR	9 JAN	115.8	74.0	1511	1473		
1986 002C	COSMOS 1718	16451	USSR	9 JAN	115.6	74.0	1493	1473		
1986 002D	COSMOS 1719	16452	USSR	9 JAN	115.3	74.0	1482	1453		
1986 002E	COSMOS 1720	16453	USSR	9 JAN	115.1	74.0	1482	1438		
1986 002F	COSMOS 1721	16454	USSR	9 JAN	114.9	74.0	1481	1424		
1986 002G	COSMOS 1722	16455	USSR	9 JAN	114.8	74.0	1482	1410		
1986 002H	COSMOS 1723	16456	USSR	9 JAN	114.6	74.0	1480	1397		
1986 002J		16457	USSR	9 JAN	117.9	74.0	1694	1479		
1986 003B	SATCOM KU1	16482	US	12 JAN	1436.2	0.0	35795	35780		
1986 003C		16483	US	12 JAN	616.2	27.4	34859	356		
1986 005A	COSMOS 1725	16493	USSR	17 JAN	104.8	82.9	1000	965		
1986 005B		16494	USSR	17 JAN	104.6	82.9	993	959		
1986 006A	COSMOS 1726	16495	USSR	17 JAN	96.9	82.5	623	594		
1986 006B		16496	USSR	17 JAN	97.4	82.5	648	615		
1986 007A	RADUGA 18	16497	USSR	17 JAN	1457.4	4.5	36510	35893		
1986 007E		16501	USSR	17 JAN	647.7	47.0	36585	252		
1986 007F		16870	USSR	17 JAN	1472.4	4.6	36635	36353		
1986 008A	COSMOS 1727	16510	USSR	23 JAN	104.8	82.9	1013	955		
1986 008B		16511	USSR	23 JAN	104.7	82.9	1003	956		
1986 010A	PRC 18	16526	PRC	1 FEB	1435.3	3.3	35792	35750		
1986 010B		16528	PRC	1 FEB	627.7	30.8	35304	505		
1986 011A	COSMOS 1729	16527	USSR	1 FEB	717.3	64.1	37116	3215		
1986 011F		16533	USSR	1 FEB	705.7	64.4	36628	3126		
1986 014A		16591	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014B		16592	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014C		16622	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014D		16623	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014E		16624	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014F		16625	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014G		16630	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 014H		16631	US	9 FEB	ELEMENTS NOT AVAILABLE					
1986 015A	COSMOS 1732	16593	USSR	11 FEB	116.0	73.6	1523	1477		
1986 015B		16594	USSR	11 FEB	115.9	73.6	1519	1477		
1986 016A	BS-2B	16597	JAPAN	12 FEB	1450.3	1.4	36156	35973		
1986 016C		16600	JAPAN	12 FEB	415.2	28.2	23893	223		
1986 017A	MIR	16609	USSR	19 FEB	92.4	51.6	400	379		
1986 017B - 017GB			USSR	19 FEB	SEE NOTE 47*					47*
1986 017GA		21888	USSR	19 FEB	89.5	51.6	258	240		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 018A	COSMOS 1733	16611	USSR	19 FEB	96.9	82.5	624	597		
1986 018B		16612	USSR	19 FEB	97.4	82.5	645	618		
1986 019A	SPOT 1	16613	FRANCE	22 FEB	101.3	98.7	823	820		
1986 019B	VIKING	16614	SWEDEN	22 FEB	261.6	98.7	13527	812		
1986 019C - 019VL			ESA	22 FEB	SEE NOTE		45*			45*
1986 022C		16863	USSR	13 MAR	89.5	51.6	253	244		
1986 024A	COSMOS 1736	16647	USSR	21 MAR	104.4	65.0	1005	925		
1986 024B - 024AF			USSR	21 MAR	SEE NOTE		44*			44*
1986 026A	GSTAR 2	16649	US	28 MAR	1436.0	0.0	35786	35785		
1986 026B	SBTS 2	16650	BRAZIL	28 MAR	1436.2	0.0	35857	35719		
1986 026C		16657	ESA	28 MAR	651.4	6.5	36593	433		
1986 026E		17253	ESA	28 MAR	537.2	8.3	30514	507		
1986 026F		17254	ESA	28 MAR	534.4	8.4	30411	457		
1986 027A	COSMOS 1738	16667	USSR	4 APR	1435.8	4.2	35838	35723		
1986 027F		16676	USSR	4 APR	1474.1	4.4	36684	36368		
1986 030A	COSMOS 1741	16681	USSR	18 APR	100.6	74.0	802	773		
1986 030B		16682	USSR	18 APR	100.5	74.0	792	770		
1986 030C		17842	USSR	18 APR	100.8	74.0	809	780		
1986 030D		17843	USSR	18 APR	100.7	74.0	807	780		
1986 030E		18274	USSR	18 APR	100.2	74.1	797	737		
1986 030F		18526	USSR	18 APR	100.3	74.1	775	767		
1986 030G		18681	USSR	18 APR	100.8	74.0	810	780		
1986 030H		19235	USSR	18 APR	104.0	74.0	950	939		
1986 031A	MOLNIYA 3-28	16683	USSR	18 APR	717.8	64.9	38293	2064		
1986 031D		16686	USSR	18 APR	733.5	65.0	38949	2175		
1986 034A	COSMOS 1743	16719	USSR	15 MAY	97.0	82.6	628	597		
1986 034B		16720	USSR	15 MAY	97.4	82.6	650	616		
1986 037A	COSMOS 1745	16727	USSR	23 MAY	104.8	83.0	1008	960		
1986 037B		16728	USSR	23 MAY	104.6	83.0	1000	954		
1986 038A	EKRAN 15	16729	USSR	24 MAY	1491.6	5.2	36918	36812		
1986 038D		16732	USSR	24 MAY	1420.5	5.0	35580	35382		
1986 038E		16733	USSR	24 MAY	254.4	47.9	13280	559		
1986 039A	METEOR 2-14	16735	USSR	27 MAY	104.0	82.5	956	934		
1986 039B		16736	USSR	27 MAY	104.0	82.5	955	935		
1986 042A	COSMOS 1748	16758	USSR	6 JUN	115.1	74.0	1468	1451		
1986 042B	COSMOS 1749	16759	USSR	6 JUN	114.4	74.0	1466	1391		
1986 042C	COSMOS 1750	16760	USSR	6 JUN	114.6	74.0	1468	1406		
1986 042D	COSMOS 1751	16761	USSR	6 JUN	115.6	74.0	1503	1465		
1986 042E	COSMOS 1752	16762	USSR	6 JUN	115.4	74.0	1484	1466		
1986 042F	COSMOS 1753	16763	USSR	6 JUN	115.3	74.0	1475	1459		
1986 042G	COSMOS 1754	16764	USSR	6 JUN	114.9	74.0	1468	1436		
1986 042H	COSMOS 1755	16765	USSR	6 JUN	114.8	74.0	1467	1422		
1986 042J		16766	USSR	6 JUN	117.7	74.0	1681	1470		
1986 044A	GORIZONT 12	16769	USSR	10 JUN	1436.6	3.9	35810	35780		
1986 044F		16797	USSR	10 JUN	1474.4	4.1	36583	36482		
1986 046A	COSMOS 1758	16791	USSR	12 JUN	97.2	82.5	640	605		
1986 046B		16792	USSR	12 JUN	97.4	82.5	652	616		
1986 047A	COSMOS 1759	16798	USSR	18 JUN	104.7	82.9	999	963		
1986 047B		16799	USSR	18 JUN	104.6	82.9	1024	924		
1986 049A	MOLNIYA 3-29	16802	USSR	19 JUN	718.7	64.8	38983	1415		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 049D		16805	USSR	19 JUN	733.1	65.1	39708	1401		
1986 050A	COSMOS 1761	16849	USSR	5 JUL	717.1	65.8	36897	3424		
1986 050D		16854	USSR	5 JUL	710.0	66.0	36679	3290		
1986 052A	COSMOS 1763	16860	USSR	16 JUL	100.3	74.0	796	748		
1986 052B		16864	USSR	16 JUL	100.2	74.0	795	744		
1986 052C		16865	USSR	16 JUL	99.4	74.0	753	711		
1986 052D		16866	USSR	16 JUL	99.4	74.0	750	707		
1986 052E		16867	USSR	16 JUL	99.7	74.0	763	721		
1986 055A	COSMOS 1766	16881	USSR	28 JUL	97.1	82.5	634	605		
1986 055B		16882	USSR	28 JUL	97.4	82.5	651	618		
1986 057A	MOLNIYA 1-67	16885	USSR	30 JUL	717.4	64.7	38526	1807		
1986 057D		16889	USSR	30 JUL	731.7	65.0	39235	1801		
1986 061A	EGP	16908	JAPAN	12 AUG	115.7	50.0	1498	1478		
1986 061B	JAS-1	16909	JAPAN	12 AUG	115.7	50.0	1497	1479		
1986 061C		16910	JAPAN	12 AUG	116.9	50.0	1595	1483		
1986 062A	COSMOS 1771	16917	USSR	20 AUG	104.2	65.0	981	927		
1986 062C		17035	USSR	20 AUG	103.9	65.0	957	923		
1986 065A	COSMOS 1774	16922	USSR	28 AUG	716.6	65.0	37516	2782		
1986 065D		16925	USSR	28 AUG	707.0	65.3	36894	2929		
1986 067B - 067AF			USSR	3 SEP	SEE NOTE		46*			46*
1986 068A	MOLNIYA 1-68	16934	USSR	5 SEP	717.9	64.7	38042	2315		
1986 068D		16939	USSR	5 SEP	731.3	64.8	38580	2437		
1986 070A	COSMOS 1777	16952	USSR	10 SEP	100.6	74.0	802	769		
1986 070B		16953	USSR	10 SEP	100.4	74.0	785	768		
1986 071A	COSMOS 1778	16961	USSR	16 SEP	675.7	64.8	19142	19116		
1986 071B	COSMOS 1779	16962	USSR	16 SEP	675.7	64.8	19144	19114		
1986 071C	COSMOS 1780	16963	USSR	16 SEP	675.7	64.8	19149	19109		
1986 071F		16968	USSR	16 SEP	675.2	64.8	19145	19087		
1986 071G		16984	USSR	16 SEP	311.4	64.4	17544	136		
1986 071H		16985	USSR	16 SEP	298.6	64.5	16698	142		
1986 073A	NOAA 10	16969	US	17 SEP	101.0	98.5	819	800		
1986 073B		16982	US	17 SEP	97.9	98.6	658	654		
1986 074A	COSMOS 1782	16986	USSR	30 SEP	97.1	82.5	632	608		
1986 074B		16987	USSR	30 SEP	97.4	82.5	647	621		
1986 075A	COSMOS 1783	16993	USSR	3 OCT	358.0	63.5	19532	1114		
1986 075D		16996	USSR	3 OCT	357.0	63.6	19500	1081		
1986 078A	COSMOS 1785	17031	USSR	15 OCT	722.4	67.1	37920	2659		
1986 078D		17037	USSR	15 OCT	707.7	67.5	37224	2630		
1986 079A	MOLNIYA 3-30	17038	USSR	20 OCT	717.6	64.9	38448	1894		
1986 079D		17041	USSR	20 OCT	699.0	64.9	37596	1826		
1986 082A	RADUGA 19	17046	USSR	25 OCT	1436.2	3.7	35799	35776		
1986 082D		17052	USSR	25 OCT	637.1	45.9	36043	252		
1986 082E		17053	USSR	25 OCT	101.8	46.4	1551	132		
1986 082F		17065	USSR	25 OCT	1475.5	3.8	36682	36425		
1986 086A	COSMOS 1791	17066	USSR	13 NOV	104.7	83.0	1008	949		
1986 086B		17067	USSR	13 NOV	104.5	82.9	997	948		
1986 086C		18552	USSR	13 NOV	103.8	82.9	959	914		
1986 088A	POLAR BEAR	17070	US	14 NOV	104.8	89.6	1015	954		
1986 088B		17071	US	14 NOV	104.8	89.6	1013	954		
1986 088C		18426	US	14 NOV	105.1	89.1	1050	946		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1986 LAUNCHES (CONT.)										
1986 088D		18525	US	14 NOV	104.2	89.9	962	953		
1986 089A	MOLNIYA 1-69	17078	USSR	15 NOV	717.8	63.4	38484	1869		
1986 089D		17081	USSR	15 NOV	735.8	63.4	38945	2294		
1986 090A	GORIZONT 13	17083	USSR	18 NOV	1488.8	3.5	36865	36758		
1986 090D		17125	USSR	18 NOV	1434.6	3.5	35803	35712		
1986 090F		17149	USSR	18 NOV	632.9	47.3	35812	268		
1986 091A	COSMOS 1793	17134	USSR	20 NOV	718.0	66.5	37557	2805		
1986 091D		17147	USSR	20 NOV	705.9	67.2	37153	2612		
1986 092A	COSMOS 1794	17138	USSR	21 NOV	115.6	74.0	1498	1463		
1986 092B	COSMOS 1795	17139	USSR	21 NOV	115.4	74.0	1480	1464		
1986 092C	COSMOS 1796	17140	USSR	21 NOV	115.2	74.0	1476	1452		
1986 092D	COSMOS 1797	17141	USSR	21 NOV	115.0	74.0	1470	1442		
1986 092E	COSMOS 1798	17142	USSR	21 NOV	114.8	74.0	1470	1427		
1986 092F	COSMOS 1799	17143	USSR	21 NOV	114.7	74.0	1470	1412		
1986 092G	COSMOS 1800	17144	USSR	21 NOV	114.5	74.0	1470	1396		
1986 092H	COSMOS 1801	17145	USSR	21 NOV	114.4	74.0	1469	1383		
1986 092J		17146	USSR	21 NOV	117.6	74.0	1672	1475		
1986 093A	COSMOS 1802	17159	USSR	24 NOV	104.9	82.9	1019	959		
1986 093B		17160	USSR	24 NOV	104.8	82.9	1011	955		
1986 094A	COSMOS 1803	17177	USSR	2 DEC	115.9	82.6	1500	1494		
1986 094B		17178	USSR	2 DEC	115.9	82.6	1498	1492		
1986 094C		20284	USSR	2 DEC	117.3	83.2	1739	1382		
1986 096A		17181	US	5 DEC	1436.1	0.6	35865	35708		
1986 097A	COSMOS 1805	17191	USSR	10 DEC	97.0	82.5	627	602		
1986 097B		17192	USSR	10 DEC	97.4	82.5	647	618		
1986 098A	COSMOS 1806	17213	USSR	12 DEC	716.9	63.8	37063	3246		
1986 098D		17216	USSR	12 DEC	705.8	64.3	36680	3083		
1986 100A	COSMOS 1808	17239	USSR	17 DEC	105.0	82.9	1016	968		
1986 100B		17240	USSR	17 DEC	104.8	82.9	1008	964		
1986 100C		18545	USSR	17 DEC	104.1	82.9	974	934		
1986 101A	COSMOS 1809	17241	USSR	18 DEC	104.1	82.5	960	940		
1986 101B		17242	USSR	18 DEC	104.1	82.5	961	939		
1986 101C		17268	USSR	18 DEC	103.7	82.6	953	911		
1986 101D		17269	USSR	19 DEC	104.1	82.6	966	941		
1986 101E		17270	USSR	19 DEC	104.0	82.4	950	942		
1986 101F		17271	USSR	18 DEC	103.4	82.4	941	901		
1986 101G		17272	USSR	18 DEC	103.3	82.5	924	906		
1986 101H		17273	USSR	18 DEC	103.2	82.5	921	902		
1986 101J		17274	USSR	19 DEC	104.1	82.5	977	930		
1986 101K		17844	USSR	18 DEC	103.3	82.5	927	902		
1986 101L		18680	USSR	18 DEC	103.3	82.5	926	906		
1986 103A	MOLNIYA 1-70	17264	USSR	26 DEC	717.6	63.8	39436	912		
1986 103D		17267	USSR	26 DEC	698.8	64.0	38534	882		
1987 LAUNCHES										
1987 001A	METEOR 2-15	17290	USSR	5 JAN	104.0	82.5	954	937		
1987 001B		17291	USSR	5 JAN	104.0	82.5	953	938		
1987 003A	COSMOS 1812	17295	USSR	14 JAN	97.0	82.5	628	602		
1987 003B		17296	USSR	14 JAN	97.4	82.5	647	620		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 004C - 004HC			USSR	15 JAN	SEE NOTE		48*			48*
1987 006A	COSMOS 1814	17303	USSR	21 JAN	100.5	74.1	799	763		
1987 006B		17304	USSR	21 JAN	100.4	74.1	795	757		
1987 006C		18257	USSR	21 JAN	100.2	74.0	770	761		
1987 008A	MOLNIYA 3-31	17328	USSR	22 JAN	717.7	63.4	38733	1616		
1987 008D		17333	USSR	22 JAN	730.8	63.4	39141	1851		
1987 009A	COSMOS 1816	17359	USSR	29 JAN	104.8	82.9	1008	958		
1987 009B		17360	USSR	29 JAN	104.6	82.9	1005	946		
1987 011A	COSMOS 1818	17369	USSR	1 FEB	100.7	65.0	802	776		
1987 012B		17481	JAPAN	5 FEB	94.5	31.1	540	446		
1987 012K		18927	JAPAN	5 FEB	93.5	30.8	474	412		
1987 015A		17506	US	12 FEB	ELEMENTS NOT AVAILABLE					
1987 015B		17507	US	12 FEB	ELEMENTS NOT AVAILABLE					
1987 017A	COSMOS 1821	17525	USSR	18 FEB	104.8	82.9	1013	958		
1987 017B		17526	USSR	18 FEB	104.6	82.9	1008	945		
1987 018A	MOS-1	17527	JAPAN	19 FEB	103.2	99.0	909	908		
1987 018B		17528	JAPAN	19 FEB	99.8	97.4	871	626		
1987 020A	COSMOS 1823	17535	USSR	20 FEB	116.0	73.6	1522	1477		
1987 020B - 020DQ			USSR	20 FEB	SEE NOTE		49*			49*
1987 022A	GOES 7	17561	US	26 FEB	1436.1	0.0	35807	35770		
1987 022B		17562	US	26 FEB	89.7	21.7	342	179		
1987 022C		17563	US	26 FEB	627.7	17.8	35559	255		
1987 024A	COSMOS 1825	17566	USSR	3 MAR	96.9	82.5	624	599		
1987 024B		17567	USSR	3 MAR	97.4	82.5	648	617		
1987 026A	COSMOS 1827	17582	USSR	13 MAR	113.8	82.6	1409	1393		
1987 026B	COSMOS 1828	17583	USSR	13 MAR	113.7	82.6	1409	1381		
1987 026C	COSMOS 1829	17584	USSR	13 MAR	114.0	82.6	1412	1408		
1987 026D	COSMOS 1830	17585	USSR	13 MAR	113.9	82.6	1409	1404		
1987 026E	COSMOS 1831	17586	USSR	13 MAR	113.8	82.6	1409	1388		
1987 026F	COSMOS 1832	17587	USSR	13 MAR	113.9	82.6	1409	1398		
1987 026G		17588	USSR	13 MAR	114.6	82.6	1468	1408		
1987 027A	COSMOS 1833	17589	USSR	18 MAR	101.9	70.9	852	845		
1987 027B		17590	USSR	18 MAR	101.7	71.0	842	834		
1987 027C		18416	USSR	18 MAR	104.7	71.0	1121	840		
1987 027D		18417	USSR	18 MAR	104.9	71.0	1144	839		
1987 027E		18527	USSR	18 MAR	104.8	71.0	1133	840		
1987 027F		18550	USSR	18 MAR	104.6	71.0	1111	838		
1987 028A	RADUGA 20	17611	USSR	19 MAR	1436.1	3.5	35794	35777		
1987 028D		17705	USSR	19 MAR	1441.9	3.7	36013	35785		
1987 028E		17709	USSR	19 MAR	635.6	47.4	35901	318		
1987 029A	PALAPA B-2P	17706	INDNSA	20 MAR	1436.1	0.0	35788	35786		
1987 030A	KVANT 1	17845	USSR	31 MAR	92.4	51.6	400	379		
1987 036H		17913	USSR	24 APR	176.2	64.7	7858	210		
1987 036K		21622	USSR	24 APR	143.8	65.0	4208	1222		
1987 036L		21623	USSR	24 APR	215.7	62.8	10603	466		
1987 036M		21657	USSR	24 APR	149.9	64.8	4754	1185		
1987 036N		21725	USSR	24 APR	150.2	64.8	4417	1545		
1987 038A	COSMOS 1842	17911	USSR	27 APR	97.1	82.5	633	605		
1987 038B		17912	USSR	27 APR	97.4	82.5	649	619		
1987 040A	GORIZONT 14	17969	USSR	11 MAY	1436.4	5.3	35804	35779		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 040D		17972	USSR	11 MAY	1397.8	5.2	35097	34971		
1987 040E		18111	USSR	11 MAY	537.1	46.9	30892	128		
1987 040F		18112	USSR	11 MAY	597.7	47.0	34107	144		
1987 041A	COSMOS 1844	17973	USSR	13 MAY	101.9	70.9	854	841		
1987 041B		17974	USSR	13 MAY	101.6	71.0	845	827		
1987 041C		18410	USSR	13 MAY	105.0	71.0	1144	842		
1987 041D		18411	USSR	13 MAY	104.8	71.0	1125	843		
1987 041E		18412	USSR	13 MAY	104.8	71.0	1128	839		
1987 041F		18476	USSR	13 MAY	105.0	71.0	1151	841		
1987 041G		18687	USSR	13 MAY	97.1	71.0	627	615		
1987 043A		17997	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043B		17998	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043C		18007	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043D		18008	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043E		18009	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043F		18010	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043G		18024	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 043H		18025	US	15 MAY	ELEMENTS NOT AVAILABLE					
1987 048A	COSMOS 1849	18083	USSR	4 JUN	716.5	67.2	38048	2240		
1987 048D		18086	USSR	4 JUN	706.2	67.3	37563	2217		
1987 049A	COSMOS 1850	18095	USSR	9 JUN	100.6	74.0	798	776		
1987 049B		18096	USSR	9 JUN	100.5	74.0	793	768		
1987 050A	COSMOS 1851	18103	USSR	12 JUN	718.3	63.5	37683	2697		
1987 050D		18106	USSR	12 JUN	707.3	63.7	37122	2714		
1987 051A	COSMOS 1852	18113	USSR	16 JUN	115.6	74.0	1498	1470		
1987 051B	COSMOS 1853	18114	USSR	16 JUN	115.4	74.0	1480	1471		
1987 051C	COSMOS 1854	18115	USSR	16 JUN	115.3	74.0	1478	1457		
1987 051D	COSMOS 1855	18116	USSR	16 JUN	115.1	74.0	1475	1444		
1987 051E	COSMOS 1856	18117	USSR	16 JUN	114.9	74.0	1475	1429		
1987 051F	COSMOS 1857	18118	USSR	16 JUN	114.8	74.0	1475	1415		
1987 051G	COSMOS 1858	18119	USSR	16 JUN	114.6	74.0	1475	1400		
1987 051H	COSMOS 1859	18120	USSR	16 JUN	114.4	74.0	1474	1385		
1987 051J		18121	USSR	16 JUN	117.8	74.0	1685	1475		
1987 052A	COSMOS 1860	18122	USSR	18 JUN	104.0	65.0	975	916		
1987 052D		18241	USSR	18 JUL	103.7	65.0	956	906		
1987 053A		18123	US	20 JUN	101.7	98.8	849	829		
1987 053B		18127	US	20 JUN	100.0	98.8	765	751		
1987 053C		18128	US	20 JUN	98.9	98.8	710	705		
1987 053D		18154	US	20 JUN	98.7	98.8	698	690		
1987 054A	COSMOS 1861	18129	USSR	23 JUN	104.9	82.9	998	978		
1987 054B		18130	USSR	23 JUN	104.6	82.9	990	965		
1987 054C		18131	USSR	23 JUN	105.0	82.9	1017	969		
1987 055A	COSMOS 1862	18152	USSR	1 JUL	97.2	82.5	639	605		
1987 057A	COSMOS 1864	18160	USSR	6 JUL	104.7	82.9	1003	955		
1987 057B		18161	USSR	6 JUL	104.6	82.9	1000	951		
1987 060A	COSMOS 1867	18187	USSR	10 JUL	100.7	65.0	804	776		
1987 062A	COSMOS 1869	18214	USSR	16 JUL	97.1	82.5	636	605		
1987 062B		18215	USSR	16 JUL	97.4	82.5	652	618		
1987 065C		19033	USSR	1 AUG	115.4	102.1	1495	1453		
1987 068A	METEOR 2-16	18312	USSR	18 AUG	104.0	82.6	955	939		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 069D		18313	USSR	18 AUG	104.0	82.6	954	939		
1987 070A	ETS-V	18316	JAPAN	27 AUG	1436.1	0.5	35802	35770		
1987 073A	EKRAN 16	18328	USSR	4 SEP	1492.5	3.8	36909	36858		
1987 073D		18331	USSR	4 SEP	1420.4	3.7	35565	35390		
1987 073E		18332	USSR	4 SEP	463.6	47.0	26585	340		
1987 074A	COSMOS 1875	18334	USSR	7 SEP	113.7	82.6	1407	1383		
1987 074B	COSMOS 1876	18335	USSR	7 SEP	114.0	82.6	1413	1406		
1987 074C	COSMOS 1877	18336	USSR	7 SEP	113.9	82.6	1407	1405		
1987 074D	COSMOS 1878	18337	USSR	7 SEP	113.9	82.6	1407	1400		
1987 074E	COSMOS 1879	18338	USSR	7 SEP	113.8	82.6	1406	1395		
1987 074F	COSMOS 1880	18339	USSR	7 SEP	113.8	82.6	1406	1390		
1987 074G		18340	USSR	7 SEP	114.6	82.6	1471	1406		
1987 078A	AUSSAT K3	18350	AUSTRL	16 SEP	1436.1	0.0	35802	35772		
1987 078B	ECS 4	18351	ESA	16 SEP	1436.1	0.0	35800	35774		
1987 079A	COSMOS 1883	18355	USSR	16 SEP	675.7	65.8	19147	19111		
1987 079B	COSMOS 1884	18356	USSR	16 SEP	675.7	65.9	19155	19103		
1987 079C	COSMOS 1885	18357	USSR	16 SEP	675.7	65.8	19155	19103		
1987 079F		18360	USSR	16 SEP	674.7	65.8	19138	19070		
1987 079G		18374	USSR	16 SEP	339.6	65.4	18759	735		
1987 079H		18375	USSR	16 SEP	339.6	65.3	18725	765		
1987 080A		18361	US	16 SEP	107.2	90.4	1177	1012		
1987 080B		18362	US	16 SEP	107.2	90.3	1178	1013		
1987 080C		18363	US	16 SEP	107.2	90.3	1179	1013		
1987 080E		18365	US	16 SEP	107.0	90.3	1163	1007		
1987 080F		18530	US	16 SEP	106.3	90.4	1119	990		
1987 080G		18561	US	16 SEP	107.0	90.4	1161	1011		
1987 080H		18562	US	16 SEP	107.8	90.2	1261	987		
1987 084A	COSMOS 1886	18384	USSR	1 OCT	1436.1	2.7	35821	35753		
1987 087A	COSMOS 1891	18402	USSR	14 OCT	104.8	82.9	1023	948		
1987 087B		18403	USSR	14 OCT	104.7	82.9	1022	935		
1987 088A	COSMOS 1892	18421	USSR	20 OCT	97.0	82.5	628	600		
1987 088B		18422	USSR	20 OCT	97.4	82.5	651	618		
1987 090A		18441	US	26 OCT	ELEMENTS NOT AVAILABLE					
1987 091A	COSMOS 1894	18443	USSR	28 OCT	1436.6	2.8	35811	35780		
1987 091D		18446	USSR	23 OCT	1434.4	2.8	35853	35655		
1987 091F		18448	USSR	28 OCT	599.4	46.8	34204	135		
1987 095A	TVSAT 1	18570	FRG	21 NOV	1452.5	3.0	36173	36042		
1987 096A	COSMOS 1897	18575	USSR	24 NOV	1435.8	2.6	35811	35750		
1987 096D		18578	USSR	26 NOV	1432.0	2.5	35803	35610		
1987 097A		18583	US	29 NOV	ELEMENTS NOT AVAILABLE					
1987 097B		18584	US	29 NOV	ELEMENTS NOT AVAILABLE					
1987 098A	COSMOS 1898	18585	USSR	1 DEC	100.6	74.0	801	770		
1987 098B		18586	USSR	1 DEC	100.4	74.0	794	763		
1987 098C		18697	USSR	1 DEC	100.3	74.0	779	768		
1987 098D		18698	USSR	1 DEC	100.7	74.0	805	778		
1987 100A	RADUGA 21	18631	USSR	10 DEC	1436.3	2.6	35798	35780		
1987 100D		18634	USSR	10 DEC	1392.7	2.5	35001	34862		
1987 100G		21620	USSR	10 DEC	234.0	46.6	12223	179		
1987 101A	COSMOS 1900	18665	USSR	12 DEC	99.2	66.1	753	686		
1987 105A	COSMOS 1903	18701	USSR	21 DEC	717.9	63.2	38460	1902		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1987 LAUNCHES (CONT.)										
1987 106D		18704	USSR	21 DEC	705.1	64.3	37682	2045		
1987 106A	COSMOS 1904	18709	USSR	23 DEC	104.8	82.9	1003	964		
1987 106B		18710	USSR	23 DEC	104.7	82.9	996	960		
1987 109A	EKRAN 17	18715	USSR	27 DEC	1436.0	2.3	35797	35772		
1987 109D		18718	USSR	27 DEC	1428.2	2.2	35899	35362		
1987 109E		18719	USSR	27 DEC	447.5	47.0	25722	280		
1988 LAUNCHES										
1988 001A	COSMOS 1908	18748	USSR	6 JAN	97.0	82.5	630	604		
1988 001B		18749	USSR	6 JAN	97.4	82.5	648	620		
1988 002A	COSMOS 1909	18788	USSR	15 JAN	114.0	82.6	1410	1408		
1988 002B	COSMOS 1910	18789	USSR	15 JAN	113.9	82.6	1409	1403		
1988 002C	COSMOS 1911	18790	USSR	15 JAN	113.9	82.6	1410	1396		
1988 002D	COSMOS 1912	18791	USSR	15 JAN	113.8	82.6	1409	1391		
1988 002E	COSMOS 1913	18792	USSR	15 JAN	113.7	82.6	1409	1386		
1988 002F	COSMOS 1914	18793	USSR	15 JAN	113.7	82.6	1410	1380		
1988 002G		18794	USSR	15 JAN	114.6	82.6	1469	1408		
1988 005A	METEOR 2-17	18820	USSR	30 JAN	103.9	82.5	956	932		
1988 005B		18821	USSR	30 JAN	103.9	82.5	954	934		
1988 006A		18822	US	3 FEB	101.2	98.6	818	809		
1988 006B		18845	US	3 FEB	96.2	98.7	584	572		
1988 006D		18955	US	3 FEB	97.7	98.7	653	643		
1988 006F		18984	US	3 FEB	99.1	98.6	720	713		
1988 012A	CS-3A	18877	JAPAN	19 FEB	1436.1	0.0	35787	35783		
1988 012C		18879	JAPAN	19 FEB	526.7	27.0	29882	571		
1988 012D		20760	JAPAN	19 FEB	430.0	27.8	24775	208		
1988 013A	COSMOS 1922	18881	USSR	26 FEB	717.2	64.0	37396	2929		
1988 013C		18883	USSR	26 FEB	705.7	64.3	36988	2770		
1988 014A	PRC 22	18922	PRC	7 MAR	1436.1	0.0	35792	35779		
1988 016A	COSMOS 1924	18937	USSR	11 MAR	115.7	74.0	1513	1457		
1988 016B	COSMOS 1925	18938	USSR	11 MAR	115.5	74.0	1495	1457		
1988 016C	COSMOS 1926	18939	USSR	11 MAR	115.3	74.0	1477	1457		
1988 016D	COSMOS 1927	18940	USSR	11 MAR	115.1	74.0	1465	1453		
1988 016E	COSMOS 1928	18941	USSR	11 MAR	114.9	74.0	1459	1442		
1988 016F	COSMOS 1929	18942	USSR	11 MAR	114.7	74.0	1458	1427		
1988 016G	COSMOS 1930	18943	USSR	11 MAR	114.6	74.0	1458	1412		
1988 016H	COSMOS 1931	18944	USSR	11 MAR	114.4	74.0	1458	1396		
1988 016J		18945	USSR	11 MAR	117.6	74.0	1685	1462		
1988 016K		19451	USSR	11 MAR	117.5	74.0	1681	1458		
1988 017A	MOLNIYA 1-71	18946	USSR	11 MAR	717.8	63.3	38611	1744		
1988 017D		18949	USSR	11 MAR	695.6	63.3	37642	1613		
1988 018A	SPACENET 3R	18951	US	11 MAR	1436.0	0.0	35791	35781		
1988 018B	TELECOM 1C	18952	FRANCE	11 MAR	1436.1	0.0	35793	35781		
1988 018C		18953	ESA	11 MAR	570.3	7.0	32539	266		
1988 019A	COSMOS 1932	18957	USSR	14 MAR	104.4	65.0	990	938		
1988 019B		19162	USSR	14 MAR	104.0	65.0	960	938		
1988 020A	COSMOS 1933	18958	USSR	15 MAR	97.1	82.5	635	608		
1988 020B		18959	USSR	15 MAR	97.4	82.5	646	619		
1988 021A	IRS-1A	18960	INDIA	17 MAR	103.1	98.9	912	894		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 021B		18961	USSR	17 MAR	102.8	98.9	930	849		
1988 022A	MOLNIYA 1-72	18980	USSR	17 MAR	717.8	64.7	38686	1671		
1988 022D		18983	USSR	17 MAR	731.6	64.9	39375	1660		
1988 023A	COSMOS 1934	18985	USSR	22 MAR	104.6	83.0	1005	946		
1988 023B		18986	USSR	22 MAR	104.5	83.0	993	947		
1988 023C		21912	USSR	22 MAR	104.6	83.0	1004	944		
1988 028A	GORIZONT 15	19017	USSR	31 MAR	1436.1	2.3	35801	35774		
1988 028D		19020	USSR	31 MAR	1472.7	2.3	36588	36410		
1988 028E		19036	USSR	31 MAR	640.4	46.4	36344	122		
1988 028F		19037	USSR	31 MAR	621.6	46.4	35148	346		
1988 029A	COSMOS 1937	19038	USSR	5 APR	100.5	74.0	799	761		
1988 029B		19039	USSR	5 APR	100.3	74.1	796	753		
1988 032A	COSMOS 1939	19045	USSR	20 APR	96.5	97.8	608	577		
1988 032B		19046	USSR	20 APR	97.2	97.8	658	587		
1988 033A		19070	US	26 APR	108.5	90.3	1301	1013		
1988 033B		19071	US	26 APR	108.5	90.3	1298	1014		
1988 033C		19072	US	26 APR	108.5	90.3	1302	1014		
1988 033D		19077	US	26 APR	108.1	90.3	1272	1003		
1988 033E		19078	US	26 APR	107.6	90.6	1236	994		
1988 033F		19140	US	26 APR	107.9	90.3	1259	1002		
1988 033G		19181	US	26 APR	109.1	90.1	1376	994		
1988 034A	COSMOS 1940	19073	USSR	26 APR	1430.3	2.3	35771	35573		
1988 034D		19076	USSR	26 APR	1438.6	2.3	35946	35725		
1988 034E		19082	USSR	26 APR	639.3	48.6	36022	387		
1988 034F		19083	USSR	26 APR	649.6	47.3	36714	223		
1988 036A	EKRAN 18	19090	USSR	6 MAY	1513.5	3.2	37348	37228		
1988 036E		19094	USSR	6 MAY	1424.1	3.1	35664	35439		
1988 039A	COSMOS 1943	19119	USSR	15 MAY	101.8	71.0	853	836		
1988 039B		19120	USSR	15 MAY	101.5	71.0	849	812		
1988 039C		19125	USSR	15 MAY	104.6	71.0	1110	837		
1988 039D		19126	USSR	15 MAY	104.7	71.0	1119	839		
1988 039E		19127	USSR	15 MAY	105.1	71.0	1156	839		
1988 039F		19128	USSR	15 MAY	105.1	71.0	1152	840		
1988 040A	INTELSAT 5A F-13	19121	ITSO	17 MAY	1436.1	0.0	35805	35769		
1988 040B		19122	ESA	17 MAY	634.3	7.2	35670	481		
1988 043A	COSMOS 1946	19163	USSR	21 MAY	675.7	64.9	19148	19110		
1988 043B	COSMOS 1947	19164	USSR	21 MAY	675.7	64.9	19142	19116		
1988 043C	COSMOS 1948	19165	USSR	21 MAY	675.7	64.9	19139	19119		
1988 043F		19168	USSR	21 MAY	674.5	64.9	19117	19079		
1988 043G		19169	USSR	21 MAY	339.8	65.4	18776	729		
1988 043H		19170	USSR	21 MAY	339.9	65.4	18755	754		
1988 044A	MOLNIYA 3-32	19189	USSR	26 MAY	717.7	64.6	38619	1733		
1988 044B		19190	USSR	26 MAY	732.9	64.8	39376	1722		
1988 046A	COSMOS 1950	19195	USSR	30 MAY	116.0	73.6	1519	1482		
1988 046B		19196	USSR	30 MAY	116.0	73.6	1514	1482		
1988 050A	COSMOS 1953	19210	USSR	14 JUN	97.2	82.5	641	606		
1988 050B		19211	USSR	14 JUN	97.4	82.5	653	616		
1988 051A	METEOSAT	19215	ESA	15 JUN	1436.2	0.1	35793	35782		
1988 051B	OSCAR 13	19216	US	15 JUN	686.6	57.0	38207	600		
1988 051C	PAS-1	19217	US	15 JUN	1436.1	0.0	35792	35782		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 051D		19218	ESA	15 JUN	380.4	10.1	21785	239		
1988 051E		19219	ESA	15 JUN	603.5	10.5	34293	260		
1988 051F		19220	ESA	15 JUN	450.2	10.1	25916	242		
1988 051G		19857	ESA	15 JUN	631.8	7.1	35336	687		
1988 051H		19951	ESA	15 JUN	632.3	8.0	35209	842		
1988 052A		19223	US	16 JUN	108.9	90.0	1198	1150		
1988 053A	COSMOS 1954	19256	USSR	21 JUN	100.6	74.1	797	772		
1988 053B		19257	USSR	21 JUN	100.4	74.1	794	762		
1988 053C		19260	USSR	21 JUN	100.4	74.1	783	771		
1988 053D		19261	USSR	21 JUN	100.4	74.1	788	769		
1988 056A	OKEAN 1	19274	USSR	5 JUL	97.2	82.5	637	608		
1988 056B		19275	USSR	5 JUL	97.4	82.5	651	620		
1988 058A	PHOBOS 1	19281	USSR	7 JUL	TRANS-MARS TRAJECTORY					
1988 058B		19282	USSR	7 JUL	HELIOCENTRIC ORBIT					
1988 059A	PHOBOS 2	19287	USSR	12 JUL	TRANS-MARS TRAJECTORY					
1988 059B		19288	USSR	12 JUL	HELIOCENTRIC ORBIT					
1988 062A	COSMOS 1959	19324	USSR	18 JUL	104.6	82.9	1003	952		
1988 062B		19325	USSR	18 JUL	104.5	82.9	996	950		
1988 063A	INSAT 1C	19330	INDIA	21 JUL	1436.4	2.2	35826	35759		
1988 063B	ECS 5	19331	ESA	21 JUL	1436.1	0.1	35812	35761		
1988 063C		19332	ESA	21 JUL	468.2	7.2	26937	251		
1988 063E		20127	ESA	21 JUL	631.4	7.9	35584	416		
1988 063F		20488	ESA	21 JUL	312.0	7.4	17394	327		
1988 064A	METEOR 3-2	19336	USSR	26 JUL	109.3	82.5	1206	1180		
1988 064B		19337	USSR	26 JUL	109.3	82.5	1204	1181		
1988 065B - 065AF			USSR	28 JUL	SEE NOTE		50*			50*
1988 066A	COSMOS 1961	19344	USSR	1 AUG	1420.2	1.9	35496	35453		
1988 066D		19347	USSR	1 AUG	1459.6	1.9	36396	36095		
1988 066E		19348	USSR	1 AUG	426.2	46.6	24534	227		
1988 069A	MOLNIYA 1-73	19377	USSR	12 AUG	717.7	64.8	39296	1052		
1988 069D		19380	USSR	12 AUG	730.9	65.1	40025	972		
1988 071A	GORIZONT 16	19397	USSR	18 AUG	1440.6	1.9	35922	35825		
1988 071D		19400	USSR	18 AUG	1432.3	1.8	35846	35577		
1988 071E		19401	USSR	18 AUG	600.1	46.7	34244	131		
1988 071F		19402	USSR	18 AUG	286.1	46.8	15818	188		
1988 074A		19419	US	25 AUG	107.3	89.9	1177	1029		
1988 074B		19420	US	25 AUG	107.3	89.9	1174	1030		
1988 074C		19421	US	25 AUG	107.4	89.9	1178	1030		
1988 074D		19515	US	25 AUG	107.2	89.9	1172	1020		
1988 074E		19516	US	25 AUG	107.1	89.9	1164	1022		
1988 074F		19559	US	25 AUG	107.2	89.4	1168	1026		
1988 074G		19577	US	25 AUG	107.2	90.5	1168	1029		
1988 076A	COSMOS 1966	19445	USSR	30 AUG	717.0	66.6	38471	1846		
1988 076D		19448	USSR	30 AUG	705.6	66.8	37976	1773		
1988 077A		19458	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 077B		19459	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 077C		19490	US	2 SEP	ELEMENTS NOT AVAILABLE					
1988 078A		19460	US	5 SEP	ELEMENTS NOT AVAILABLE					
1988 078B		19461	US	5 SEP	ELEMENTS NOT AVAILABLE					
1988 080A	FENGYUN 1	19467	PRC	6 SEP	102.7	99.2	937	833		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 080B		19468	PRC	6 SEP	102.7	99.3	895	873		
1988 081A	GSTAR 3	19483	US	8 SEP	1436.0	3.9	35797	35775		
1988 081B	SBS 5	19484	US	8 SEP	1436.1	0.0	35795	35780		
1988 081C		19485	ESA	8 SEP	439.7	7.1	25279	274		
1988 085A	COSMOS 1970	19501	USSR	16 SEP	675.7	65.6	19158	19100		
1988 085B	COSMOS 1971	19502	USSR	16 SEP	675.7	65.6	19161	19097		
1988 085C	COSMOS 1972	19503	USSR	16 SEP	675.7	65.6	19141	19117		
1988 085E		19505	USSR	16 SEP	674.9	65.6	19123	19093		
1988 085F		19535	USSR	16 SEP	339.2	65.3	18830	635		
1988 085G		19537	USSR	16 SEP	339.2	65.3	18820	648		
1988 085H		21751	USSR	16 SEP	217.8	64.8	10406	823		
1988 086A	CS-3B	19508	JAPAN	16 SEP	1436.1	0.0	35788	35782		
1988 086C		19558	JAPAN	16 SEP	629.3	27.9	35800	95		
1988 089A	NOAA 11	19531	US	24 SEP	101.9	99.0	858	842		
1988 089B		19532	US	24 SEP	98.6	99.0	699	688		
1988 089C		19534	US	24 SEP	95.5	98.9	549	534		
1988 090A	MOLNIYA 3-33	19541	USSR	29 SEP	717.4	64.9	39221	1112		
1988 090D		19544	USSR	29 SEP	698.1	64.8	38250	1129		
1988 091B	TDRS 3	19548	US	29 SEP	1436.0	0.3	35797	35774		35*
1988 091C		19549	US	29 SEP	607.4	26.8	34442	315		
1988 091D		19550	US	29 SEP	1433.3	1.1	35794	35669		
1988 092A	COSMOS 1974	19554	USSR	3 OCT	718.0	62.5	38182	2183		
1988 092D		19557	USSR	3 OCT	705.4	63.3	37558	2185		
1988 093A	COSMOS 1975	19573	USSR	11 OCT	97.2	82.5	641	605		
1988 093B		19574	USSR	11 OCT	97.4	82.5	652	616		
1988 093C		20471	USSR	11 OCT	96.3	82.5	598	568		
1988 095A	RADUGA 22	19596	USSR	20 OCT	1436.2	1.7	35809	35768		
1988 095E		19600	USSR	20 OCT	602.6	46.6	34363	144		
1988 095F		19601	USSR	20 OCT	545.2	46.6	31321	138		
1988 095F		19777	USSR	20 OCT	1470.3	1.7	36516	36391		
1988 096A	COSMOS 1977	19608	USSR	25 OCT	717.4	63.4	37721	2614		
1988 096D		19611	USSR	25 OCT	704.9	63.6	37197	2518		
1988 098A	TDF-1	19621	FRANCE	28 OCT	1436.1	0.0	35802	35772		
1988 098B		19622	ESA	28 OCT	574.4	4.3	32744	278		
1988 098C		20132	ESA	26 OCT	411.9	3.9	23714	203		
1988 099A		19625	US	6 NOV	ELEMENTS NOT AVAILABLE					
1988 099B		19626	US	6 NOV	ELEMENTS NOT AVAILABLE					
1988 102A	COSMOS 1980	19649	USSR	23 NOV	101.9	71.0	851	841		
1988 102B		19650	USSR	23 NOV	101.7	71.0	850	831		
1988 102C		19656	USSR	23 NOV	105.1	71.0	1160	840		
1988 102D		19657	USSR	23 NOV	105.1	71.0	1158	839		
1988 102E		19658	USSR	23 NOV	104.9	71.0	1138	840		
1988 102F		19659	USSR	23 NOV	104.7	71.0	1120	841		
1988 102H		19813	USSR	23 NOV	105.1	71.0	1162	839		
1988 102J		20301	USSR	23 NOV	101.9	71.0	857	837		
1988 105B		19671	US	2 DEC	ELEMENTS NOT AVAILABLE					
1988 108A	EKRAN 19	19683	USSR	8 DEC	1436.2	1.6	35799	35777		
1988 108D		19686	USSR	8 DEC	1418.5	1.5	35514	35368		
1988 109A	SKYNET 4B	19687	UK	11 DEC	1436.1	0.2	35807	35765		
1988 109B	ASTRA 1A	19688	LUXBRG	11 DEC	1437.7	0.2	36971	34663		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1988 LAUNCHES (CONT.)										
1988 109C		19689	ESA	11 DEC	639.5	6.7	35954	462		
1988 109D		19690	ESA	11 DEC	387.0	7.0	22168	259		
1988 111A	PRC 25	19710	PRC	22 DEC	1436.1	0.0	35790	35781		
1988 112A	MOLNIYA 3-34	19713	USSR	22 DEC	717.7	63.1	39184	1167		
1988 112C		19716	USSR	22 DEC	696.1	63.2	39230	1051		
1988 113A	COSMOS 1985	19720	USSR	23 DEC	90.5	73.5	305	296		
1988 113H		19764	USSR	23 DEC	94.2	73.5	483	475		
1988 115A	MOLNIYA 1-74	19730	USSR	28 DEC	717.8	64.8	39724	632		
1988 115D		19733	USSR	28 DEC	695.7	64.8	38581	678		
1989 LAUNCHES										
1989 001A	COSMOS 1987	19749	USSR	10 JAN	675.7	64.9	19148	19110		
1989 001B	COSMOS 1988	19750	USSR	10 JAN	675.7	64.9	19148	19110		
1989 001C	COSMOS 1989	19751	USSR	10 JAN	675.5	64.9	19151	19099		
1989 001E		19753	USSR	10 JAN	675.5	64.9	19150	19098		
1989 001F		19754	USSR	10 JAN	674.7	64.9	19142	19065		
1989 001G		19755	USSR	10 JAN	339.6	65.2	18736	756		
1989 001H		19856	USSR	10 JAN	339.6	65.3	18737	753		
1989 004A	GORIZONT 17	19765	USSR	26 JAN	1436.2	1.4	35796	35782		
1989 004E		19771	USSR	26 JAN	326.0	46.7	18432	190		
1989 004F		19776	USSR	26 JAN	1469.5	1.5	36529	36345		
1989 005A	COSMOS 1992	19769	USSR	26 JAN	100.5	74.0	798	766		
1989 005B		19770	USSR	26 JAN	100.3	74.0	778	768		
1989 005C		19831	USSR	26 JAN	100.3	74.1	786	762		
1989 005D		19945	USSR	26 JAN	100.2	74.2	773	766		
1989 006A	INTELSAT 5A F-15	19772	ITSO	27 JAN	1436.1	0.0	35802	35773		
1989 006B		19773	ESA	27 JAN	637.1	8.1	35759	535		
1989 009A	COSMOS 1994	19785	USSR	10 FEB	113.9	82.6	1413	1393		
1989 009B	COSMOS 1995	19786	USSR	10 FEB	114.1	82.6	1414	1410		
1989 009C	COSMOS 1996	19787	USSR	10 FEB	114.0	82.6	1413	1405		
1989 009D	COSMOS 1997	19788	USSR	10 FEB	113.9	82.6	1413	1398		
1989 009E	COSMOS 1998	19789	USSR	10 FEB	113.8	82.6	1413	1388		
1989 009F	COSMOS 1999	19790	USSR	10 FEB	113.7	82.6	1413	1382		
1989 009G		19791	USSR	10 FEB	114.7	82.6	1469	1414		
1989 011A	COSMOS 2001	19796	USSR	14 FEB	717.6	65.3	38405	1942		
1989 011D		19799	USSR	14 FEB	705.7	65.8	37910	1847		
1989 013A		19802	US	14 FEB	718.0	55.0	20300	20066		
1989 014A	MOLNIYA 1-75	19807	USSR	15 FEB	717.8	63.4	38417	1939		
1989 014D		19810	USSR	15 FEB	694.4	63.3	37325	1871		
1989 016A	EXOS-D	19822	JAPAN	21 FEB	192.1	75.1	9033	263		
1989 016C		19824	JAPAN	21 FEB	179.7	75.1	8077	266		
1989 016K		19952	JAPAN	21 FEB	152.7	75.6	5910	257		
1989 016M		19963	JAPAN	21 FEB	171.4	75.2	7415	268		
1989 016P		20034	JAPAN	21 FEB	89.8	74.8	364	164		
1989 017A	COSMOS 2004	19826	USSR	22 FEB	104.9	83.0	1014	968		
1989 018A	METEOR 2-18	19851	USSR	28 FEB	104.0	82.5	956	935		
1989 018B		19852	USSR	28 FEB	104.0	82.5	960	935		
1989 020A	JCSAT-1	19874	JAPAN	6 MAR	1436.2	0.0	35795	35781		
1989 020B	MOP-1	19876	ESA	6 MAR	1436.0	0.3	35797	35772		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 020C		19877	ESA	6 MAR	136.2	6.6	4645	134		
1989 020D		19878	ESA	6 MAR	260.2	6.7	14075	171		
1989 020E		20800	UK	6 MAR	1433.5	1.8	36271	35199		
1989 021B	TDRS-D	19883	US	13 MAR	1436.2	0.0	35799	35779		
1989 021C		19884	US	13 MAR	558.1	26.3	31867	284		
1989 021D		19913	US	13 MAR	1431.2	4.6	35802	35578		
1989 025A	COSMOS 2008	19902	USSR	24 MAR	114.4	74.0	1469	1391		
1989 025B	COSMOS 2009	19903	USSR	24 MAR	114.6	74.0	1470	1405		
1989 025C	COSMOS 2010	19904	USSR	24 MAR	114.8	74.0	1470	1421		
1989 025D	COSMOS 2011	19905	USSR	24 MAR	115.0	74.0	1470	1437		
1989 025E	COSMOS 2012	19906	USSR	24 MAR	115.1	74.0	1470	1453		
1989 025F	COSMOS 2013	19907	USSR	24 MAR	115.3	74.0	1478	1463		
1989 025G	COSMOS 2014	19908	USSR	24 MAR	115.5	74.0	1488	1469		
1989 025H	COSMOS 2015	19909	USSR	24 MAR	115.7	74.0	1507	1468		
1989 025J		19910	USSR	24 MAR	117.7	74.0	1682	1472		
1989 026A		19911	US	24 MAR	91.3	47.6	344	336		
1989 027A	TELE-X	19919	SWEDEN	2 APR	1436.1	0.0	35809	35764		
1989 028A	COSMOS 2016	19921	USSR	4 APR	104.7	83.0	1011	951		
1989 028B		19922	USSR	4 APR	104.6	83.0	1001	948		
1989 030A	RADUGA 23	19928	USSR	14 APR	1436.3	1.3	35809	35770		
1989 030D		19931	USSR	14 APR	1470.5	1.3	36536	36379		
1989 030F		19933	USSR	14 APR	597.5	46.8	34087	154		
1989 033B	MAGELLAN	19969	US	4 MAY	TRANS-VENUS TRAJECTORY					
1989 033C		19970	US	4 MAY	428.9	27.9	24656	268		
1989 033D		19971	US	4 MAY	CURRENT ELEMENTS NOT MAINTAINED					
1989 035A		19976	US	10 MAY	ELEMENTS NOT AVAILABLE					
1989 035B		19977	US	10 MAY	ELEMENTS NOT AVAILABLE					
1989 035C		19983	US	10 MAY	ELEMENTS NOT AVAILABLE					
1989 039A	COSMOS 2022	20024	USSR	31 MAY	675.7	65.4	19140	19118		
1989 039B	COSMOS 2023	20025	USSR	31 MAY	675.7	65.4	19167	19091		
1989 039C	COSMOS 2024	20026	USSR	31 MAY	675.4	65.4	19147	19095		
1989 039E		20028	USSR	31 MAY	674.5	65.4	19144	19054		
1989 039F		20044	USSR	31 MAY	675.4	65.4	19145	19096		
1989 039G		20081	USSR	31 MAY	339.4	65.1	18865	613		
1989 039H		20082	USSR	31 MAY	339.4	65.2	18871	607		
1989 041A	SUPERBIRD A	20040	JAPAN	5 JUN	1443.8	1.2	35953	35919		
1989 041B		20041	FRG	5 JUN	1436.1	0.0	35871	35700		
1989 041C		20042	ESA	5 JUN	468.6	6.6	27002	210		
1989 041D		20043	ESA	5 JUN	119.2	6.8	3121	173		
1989 042A	COSMOS 2026	20045	USSR	7 JUN	104.6	82.9	1006	948		
1989 042B		20046	USSR	7 JUN	104.5	82.9	998	946		
1989 043A	MOLNIYA 3-35	20052	USSR	8 JUN	717.8	64.7	39673	680		
1989 043D		20055	USSR	8 JUN	733.3	64.9	40477	640		
1989 044A		20061	US	10 JUN	718.0	54.9	20453	19910		
1989 045A	COSMOS 2027	20064	USSR	14 JUN	89.5	65.8	255	248		
1989 046A		20066	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046B		20067	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046C		20068	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046D		20069	US	14 JUN	ELEMENTS NOT AVAILABLE					
1989 046E		20319	US	14 JUN	ELEMENTS NOT AVAILABLE					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 048A	RADUGA 1-1	20083	USSR	21 JUN	1436.3	1.0	35793	35786		
1989 048D		20086	USSR	21 JUN	1471.1	1.1	36571	36366		
1989 048F		20094	USSR	21 JUN	477.5	46.9	27433	286		
1989 050A	NADEZHDA	20103	USSR	4 JUL	104.8	83.0	1011	954		
1989 050B		20104	USSR	4 JUL	104.6	83.0	1002	953		
1989 052A	GORIZONT 18	20107	USSR	5 JUL	1436.1	1.0	35792	35779		
1989 052D		20110	USSR	5 JUL	1397.2	0.9	35163	34880		
1989 052F		20116	USSR	5 JUL	539.1	47.3	30755	372		
1989 053A	OLYMPUS	20122	ESA	12 JUL	1436.1	0.0	35798	35776		
1989 053B		20123	ESA	12 JUL	378.1	6.5	21644	238		
1989 053C		20229	ESA	12 JUN	637.3	6.5	35867	438		
1989 059A	COSMOS 2034	20149	USSR	25 JUL	104.8	82.9	1011	962		
1989 059B		20150	USSR	25 JUL	104.7	82.9	1002	956		
1989 061B		20167	US	8 AUG	ELEMENTS NOT AVAILABLE					
1989 061C		20172	US	8 AUG	ELEMENTS NOT AVAILABLE					
1989 061D		20344	US	8 AUG	ELEMENTS NOT AVAILABLE					
1989 062A	TV-SAT 2	20168	FRG	8 AUG	1436.1	0.0	35807	35766		
1989 062B	HIPPARCOS	20169	ESA	8 AUG	638.6	6.6	35830	545		
1989 062C		20170	ESA	8 AUG	622.9	7.4	35182	384		
1991 062G		21786	JAPAN	30 AUG	95.8	31.2	675	435		
1989 064A		20185	US	18 AUG	718.0	54.9	20221	20142		
1989 067A	BSB-R1	20193	UK	27 AUG	1436.2	0.1	35797	35779		
1989 067C		20195	US	27 AUG	644.7	23.3	36412	272		
1989 068A	COSMOS 2037	20196	USSR	28 AUG	116.0	73.6	1522	1482		
1989 068B		20197	USSR	28 AUG	116.0	73.6	1520	1482		
1989 069A		20202	US	4 SEP	ELEMENTS NOT AVAILABLE					
1989 069B		20203	US	4 SEP	ELEMENTS NOT AVAILABLE					
1989 069D		20205	US	4 SEP	ELEMENTS NOT AVAILABLE					
1989 070A	GMS-4	20217	JAPAN	5 SEP	1436.1	0.4	35788	35787		
1989 070B		20230	JAPAN	5 SEP	521.4	28.3	29951	212		
1989 070C		20317	JAPAN	5 SEP	1458.1	0.6	37305	35126		
1989 072A		20220	US	6 SEP	ELEMENTS NOT AVAILABLE					
1989 072B		20221	US	6 SEP	ELEMENTS NOT AVAILABLE					
1989 074A	COSMOS 2038	20232	USSR	14 SEP	113.8	82.6	1408	1389		
1989 074B	COSMOS 2039	20233	USSR	14 SEP	113.7	82.6	1408	1382		
1989 074C	COSMOS 2040	20234	USSR	14 SEP	114.0	82.6	1412	1408		
1989 074D	COSMOS 2041	20235	USSR	14 SEP	113.8	82.6	1409	1393		
1989 074E	COSMOS 2042	20236	USSR	14 SEP	113.9	82.6	1408	1399		
1989 074F	COSMOS 2043	20237	USSR	14 SEP	113.9	82.6	1409	1405		
1989 074G		20238	USSR	14 SEP	114.7	82.6	1471	1408		
1989 077A		20253	US	25 SEP	1436.1	3.3	35802	35771		
1989 078A	MOLNIYA 1-76	20255	USSR	27 SEP	717.6	63.8	39749	594		
1989 078D		20258	USSR	27 SEP	699.3	63.8	38790	596		
1989 080A	INTER-COSMOS 24	20261	USSR	28 SEP	115.5	82.6	2455	498		
1989 080B		20281	USSR	28 SEP	115.4	82.6	2449	498		
1989 080C		20262	USSR	28 SEP	115.7	82.6	2472	497		
1989 081A	GORIZANT 19	20263	USSR	28 SEP	1436.1	0.9	35794	35779		
1989 081D		20266	USSR	28 SEP	1431.3	0.8	35815	35570		
1989 084B	GALILEO	20298	US	18 OCT	ELEMENTS NOT AVAILABLE					
1989 084C		20299	US	18 OCT	CURRENT ELEMENTS NOT MAINTAINED					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1989 LAUNCHES (CONT.)										
1989 084D		20300	US	18 OCT	ELEMENTS NOT AVAILABLE					
1989 085A		20302	US	21 OCT	718.0	54.1	20235	20128		
1989 085B		20303	US	21 OCT	98.8	35.6	910	488		
1989 086A	METEOR 3-3	20305	USSR	24 OCT	109.4	82.5	1209	1184		
1989 086B		20306	USSR	24 OCT	109.4	82.6	1209	1184		
1989 087A	INTELSAT 6A	20315	ITSO	27 OCT	1436.1	0.1	35799	35773		
1989 087B		20316	ESA	27 OCT	596.2	7.1	33902	274		
1989 089A	COBE	20322	US	18 NOV	102.3	99.0	893	848		
1989 089B		20323	US	18 NOV	99.8	97.1	804	690		
1989 089C		20324	US	18 NOV	102.4	99.0	880	861		
1989 089D		20328	US	18 NOV	102.7	99.0	888	882		
1989 090B		20355	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 090C		20356	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 090D		20357	US	23 NOV	ELEMENTS NOT AVAILABLE					
1989 091A	COSMOS 2050	20330	USSR	23 NOV	717.9	62.8	39085	1275		
1989 091D		20333	USSR	23 NOV	705.2	63.4	38437	1293		
1989 093A	KVANT -2	20335	USSR	26 NOV	92.4	51.6	400	379		
1989 094A	MOLNIYA 3-36	20338	USSR	28 NOV	717.7	63.9	39805	542		
1989 094B		20339	USSR	28 NOV	732.1	63.9	40510	549		
1989 096A	GRANAT	20352	USSR	1 DEC	5901.0	84.3	172619	30965		
1989 096C		20354	USSR	1 DEC	5781.8	83.5	171067	29593		
1989 097A		20361	US	11 DEC	718.0	55.1	20350	20013		
1989 097B		20362	US	11 DEC	98.6	35.6	897	484		
1989 098A	RADUGA 24	20367	USSR	15 DEC	1436.0	0.6	35798	35770		
1989 098D		20370	USSR	15 DEC	1471.6	0.6	36572	36386		
1989 100A	COSMOS 2053	20389	USSR	27 DEC	93.6	73.5	456	448		
1989 100B - 100AG			USSR	27 DEC	SEE NOTE		51*			51*
1989 101A	COSMOS 2054	20391	USSR	27 DEC	1436.1	0.6	35799	35773		
1989 101D		20394	USSR	27 DEC	1465.7	0.6	36414	36313		
1989 101E		20399	USSR	27 DEC	483.2	46.9	27764	272		
1989 101G		21648	USSR	27 DEC	CURRENT ELEMENTS NOT MAINTAINED					
1990 LAUNCHES										
1990 001A	SKYNET 4A	20401	UK	1 JAN	1436.1	2.1	35796	35779		
1990 001B	JCSAT	20402	JAPAN	1 JAN	1436.2	0.0	35796	35779		
1990 001D		20404	US	1 JAN	606.4	21.7	34392	314		
1990 001F		20406	US	1 JAN	330.7	26.9	18671	256		
1990 002B	LEASAT 5	20410	US	9 JAN	1436.0	2.6	35802	35771		
1990 002C		20411	US	9 JAN	267.9	27.3	14464	310		
1990 004A	COSMOS 2056	20432	USSR	18 JAN	100.6	74.0	803	770		
1990 004B		20433	USSR	18 JAN	100.5	74.0	806	755		
1990 004C		20434	USSR	18 JAN	100.8	74.0	809	781		
1990 004D		20435	USSR	18 JAN	100.3	74.0	788	755		
1990 005A	SPOT-2	20436	FRANCE	22 JAN	101.3	98.7	822	821		
1990 005B	OSCAR 14	20437	UK	22 JAN	100.7	98.6	799	781		
1990 005C	OSCAR 15	20438	UK	22 JAN	100.7	98.6	800	784		
1990 005D	OSCAR 16	20439	US	22 JAN	100.7	98.6	799	780		
1990 005E	OSCAR 17	20440	BRAZIL	22 JAN	100.7	98.6	799	780		
1990 005F	OSCAR 18	20441	US	22 JAN	100.7	98.6	799	779		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 005G	OSCAR 19	20442	ARGNT	22 JAN	100.6	98.6	799	779		
1990 005H		20443	ESA	22 JAN	100.5	98.5	791	774		
1990 006A	MOLNIYA 3	20444	USSR	23 JAN	717.6	64.4	39914	429		
1990 006C		20446	USSR	23 JAN	696.7	64.3	38842	466		
1990 007A	MUSES A	20448	JAPAN	24 JAN	ELEMENTS NOT AVAILABLE					
1990 007B	HAGOROMO	20618	JAPAN	24 JAN	SELENOCENTRIC ORBIT					
1990 007D		20451	JAPAN	24 JAN	ELEMENTS NOT AVAILABLE					
1990 008A		20452	US	24 JAN	718.0	54.2	20308	20058		
1990 008B		20453	US	24 JAN	101.7	35.6	1231	447		
1990 008C		20450	US		212.3	37.7	10646	176		
1990 010A	COSMOS 2058	20465	USSR	30 JAN	ELEMENTS NOT AVAILABLE					
1990 010B		20466	USSR	30 JAN	97.5	82.5	654	624		
1990 011A	PRC-26	20473	PRC	4 FEB	1436.1	0.0	35788	35782		
1990 011B		20474	PRC	4 FEB	601.4	30.7	34142	302		
1990 011C		21255	USSR	10 DEC	100.7	74.0	802	779		
1990 012C		20481	USSR	6 FEB	CURRENT ELEMENTS NOT MAINTAINED					
1990 013A	MOS 1B	20478	JAPAN	7 FEB	103.2	99.1	909	908		
1990 013B	DEBUT	20479	JAPAN	7 FEB	112.2	99.1	1742	908		
1990 013C	JAS 1-B	20480	JAPAN	7 FEB	112.2	99.1	1742	908		
1990 013D		20491	JAPAN	7 FEB	110.5	99.1	1606	889		
1990 015A		20496	US	14 FEB	94.4	43.1	503	479		
1990 015B		20497	US	14 FEB	90.8	43.1	322	302		
1990 016A	RADUGA 25	20499	USSR	15 FEB	1436.2	0.4	35802	35775		
1990 016D		20502	USSR	15 FEB	1439.5	0.4	36023	35684		
1990 017A	NADEZHDA-2	20508	USSR	27 FEB	104.8	83.0	1017	951		
1990 017G		20509	USSR	27 FEB	104.7	83.0	1011	948		
1990 018A	OKEAN-2	20510	USSR	28 FEB	97.4	82.5	648	622		
1990 018B		20511	USSR	28 FEB	97.6	82.5	656	629		
1990 019B		20516	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019C		20517	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019D		20518	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019E		20519	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019F		20520	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 019G		20521	US	28 FEB	ELEMENTS NOT AVAILABLE					
1990 021A	INTELSAT-6	20523	ITSO	14 MAR	96.0	28.3	571	558		
1990 023A	COSMOS 2061	20527	USSR	20 MAR	104.9	82.9	1015	967		
1990 023B		20528	USSR	20 MAR	104.8	82.9	1005	967		
1990 025A		20533	US	26 MAR	718.0	55.2	20283	20081		
1990 025C		20535	US	26 MAR	177.9	37.5	8027	172		
1990 026A	COSMOS 2063	20536	USSR	27 MAR	717.9	63.8	39278	1083		
1990 026D		20539	USSR	27 MAR	709.3	64.6	38823	1112		
1990 028A	PEGSAT	20546	US	5 APR	94.5	94.1	567	420		
1990 028B		20547	US	5 APR	95.9	94.1	648	480		
1990 029A	COSMOS 2064	20549	USSR	6 APR	115.4	74.0	1488	1460		
1990 029B	COSMOS 2065	20550	USSR	6 APR	115.2	74.0	1473	1459		
1990 029C	COSMOS 2066	20551	USSR	6 APR	114.3	74.0	1460	1384		
1990 029D	COSMOS 2067	20552	USSR	6 APR	114.4	74.0	1461	1399		
1990 029E	COSMOS 2068	20553	USSR	6 APR	114.6	74.0	1460	1413		
1990 029F	COSMOS 2069	20554	USSR	6 APR	114.8	74.0	1460	1427		
1990 029G	COSMOS 2070	20555	USSR	6 APR	114.9	74.0	1461	1441		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 029H	COSMOS 2071	20556	USSR	6 APR	115.1	74.0	1460	1457		
1990 029J		20557	USSR	6 APR	117.7	74.0	1696	1461		
1990 030A	ASIASAT 1	20558	UK	7 APR	1436.2	0.1	35800	35777		
1990 030B		20559	PRC	7 APR	595.4	30.7	33838	292		
1990 031A		20560	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031B		20561	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031C		20562	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031D		20563	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031E		20564	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031F		20565	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031G		20575	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 031H		20576	US	11 APR	ELEMENTS NOT AVAILABLE					
1990 034A	PALAPA B2R	20570	INDO	13 APR	1436.2	0.0	35821	35757		
1990 034B		20571	US	13 APR	103.8	22.7	1378	501		
1990 034C		20572	US	13 APR	407.1	18.6	23426	206		
1990 036A	COSMOS 2074	20577	USSR	20 APR	104.8	82.9	1003	961		
1990 036B		20578	USSR	20 APR	104.6	82.9	993	962		
1990 037B	HST	20580	US	24 APR	96.7	28.5	602	595		
1990 038B - 038R			USSR	25 APR	SEE NOTE		58*			58*
1990 038K		21864	USSR	25 APR	89.9	73.9	270	266		
1990 039A	MOLNIYA 1-77	20583	USSR	26 APR	717.7	63.3	39493	857		
1990 039D		20586	USSR	26 APR	733.0	63.2	40216	885		
1990 040A	COSMOS 2076	20596	USSR	28 APR	717.7	63.0	39372	976		
1990 040D		20599	USSR	28 APR	707.7	63.6	38851	1002		
1990 043A	SCOUT M-1	20607	US	9 MAY	98.3	89.9	757	601		
1990 043B		20608	US	9 MAY	98.3	89.9	754	600		
1990 043C		20609	US	9 MAY	98.0	89.9	736	591		
1990 043D		20610	US	9 MAY	97.5	89.9	709	572		
1990 043E		20611	US	9 MAY	97.4	89.9	700	568		
1990 043F		20612	US	9 MAY	97.4	89.9	688	576		
1990 043H		20614	US	9 MAY	97.3	89.9	686	573		
1990 043J		20634	US	9 MAY	94.5	89.9	517	467		
1990 043K		20651	US	9 MAY	98.0	90.1	770	559		
1990 043L		20759	US	9 MAY	96.5	89.7	619	558		
1990 045A	COSMOS 2079	20619	USSR	19 MAY	675.7	65.2	19187	19071		
1990 045B	COSMOS 2080	20620	USSR	19 MAY	675.7	65.2	19150	19108		
1990 045C	COSMOS 2081	20621	USSR	19 MAY	675.7	65.2	19161	19097		
1990 045E		20623	USSR	19 MAY	674.7	65.2	19153	19055		
1990 045F		20630	USSR	19 MAY	339.7	65.0	18971	523		
1990 045G		20631	USSR	19 MAY	339.5	64.9	18973	510		
1990 046A	COSMOS 2082	20624	USSR	22 MAY	101.9	71.0	849	846		
1990 046B		20625	USSR	22 MAY	101.8	71.0	854	835		
1990 046C		20626	USSR	22 MAY	105.1	71.0	1154	840		
1990 046D		20627	USSR	22 MAY	105.2	71.0	1165	841		
1990 046E		20628	USSR	22 MAY	105.1	71.0	1157	840		
1990 046F		20629	USSR	22 MAY	105.0	71.0	1143	841		
1990 048A	KRISTALL	20635	USSR	31 MAY	92.4	51.6	400	379		
1990 049A	ROSAT	20638	FRG	1 JUN	95.7	53.0	564	542		
1990 050A		20641	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050B		20682	US	8 JUN	ELEMENTS NOT AVAILABLE					

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 050C		20691	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050D		20692	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050E		20642	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050F		21916	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 050G		21917	US	8 JUN	ELEMENTS NOT AVAILABLE					
1990 051A	INSAT-1D	20643	INDIA	12 JUN	1436.1	0.1	35811	35763		
1990 052A	MOLNIYA 3-38	20646	USSR	13 JUN	717.7	63.0	39386	964		
1990 052D		20649	USSR	13 JUN	733.6	63.0	40131	1002		
1990 054A	GORIZONT 20	20659	USSR	20 JUN	1436.1	0.1	35811	35761		
1990 054D		20662	USSR	20 JUN	1432.6	0.1	35791	35646		
1990 054E		20704	USSR	20 JUN	489.5	47.0	28088	305		
1990 055A	COSMOS 2084	20663	USSR	21 JUN	97.8	62.8	774	533		
1990 055D		20666	USSR	21 JUN	97.7	62.8	762	531		
1990 056A	INTELSAT	20667	ITSO	23 JUN	1436.2	0.0	35793	35782		
1990 056C		20669	US	23 JUN	669.2	24.7	37627	301		
1990 057A	METEOR 2-19	20670	USSR	27 JUN	104.0	82.5	957	935		
1990 057B		20671	USSR	27 JUN	104.0	82.5	956	935		
1990 061A	COSMOS 2085	20693	USSR	18 JUL	1436.2	0.1	35804	35770		
1990 061D		20696	USSR	18 JUL	1435.1	0.1	35909	35625		
1990 061F		20698	USSR	18 JUL	518.8	47.0	29691	325		
1990 063A	TDF-2	20705	FRANCE	24 JUL	1436.1	0.1	35789	35785		
1990 063B	DFS-2	20706	FRG	24 JUL	1436.1	0.0	35804	35769		
1990 063C		20717	ESA	24 JUL	635.2	3.7	35774	422		
1990 063D		20718	ESA	24 JUL	592.2	3.9	33628	337		
1990 064A	COSMOS 2087	20707	USSR	25 JUL	718.6	63.4	38820	1575		
1990 064D		20710	USSR	25 JUL	703.9	63.7	38161	1507		
1990 065A	CRRES	20712	US	25 JUL	616.0	17.5	34894	310		
1990 065B - 065P			US	25 JUL	SEE NOTE		57*			57*
1990 066A	COSMOS 2088	20720	USSR	30 JUL	116.0	73.6	1521	1482		
1990 066B		20721	USSR	30 JUL	116.0	73.6	1519	1481		
1990 068A		20724	US	2 AUG	718.0	54.7	20443	19920		
1990 070A	COSMOS 2090	20735	USSR	8 AUG	113.8	82.6	1412	1387		
1990 070B	COSMOS 2091	20736	USSR	8 AUG	114.0	82.6	1412	1408		
1990 070C	COSMOS 2092	20737	USSR	8 AUG	114.0	82.6	1412	1403		
1990 070D	COSMOS 2093	20738	USSR	8 AUG	113.9	82.6	1412	1396		
1990 070E	COSMOS 2094	20739	USSR	8 AUG	113.8	82.6	1412	1391		
1990 070F	COSMOS 2095	20740	USSR	8 AUG	113.7	82.6	1412	1380		
1990 070G		20741	USSR	8 AUG	114.6	82.6	1465	1411		
1990 071A	MOLNIYA 1-78	20742	USSR	10 AUG	717.7	63.0	39089	1262		
1990 071D		20745	USSR	10 AUG	732.7	63.0	39799	1287		
1990 074A	BSB-R2	20762	UK	18 AUG	1436.2	0.1	35790	35787		
1990 074B		20763	US	18 AUG	102.3	24.3	1260	478		
1990 074C		20764	US	18 AUG	670.4	21.3	37541	448		
1990 075A	COSMOS 2096	20765	USSR	23 AUG	92.7	65.0	415	402		
1990 076A	COSMOS 2097	20767	USSR	23 AUG	717.8	64.5	39314	1040		
1990 076D		20770	USSR	28 AUG	707.9	64.8	38844	1020		
1990 077A	BS-3A	20771	JAPAN	28 AUG	1753.3	0.0	41800	41775		
1990 078A	COSMOS 2098	20774	USSR	28 AUG	108.3	83.0	1908	392		
1990 078B		20775	USSR	28 AUG	107.7	83.0	1868	375		
1990 079A	SKYNET 4C	20776	UK	30 AUG	1436.1	3.2	35793	35780		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 079B	EUTELSAT II F1	20777	ESA	30 AUG	1436.1	0.0	35843	35728		
1990 079C		20778	ESA	30 AUG	407.4	7.3	23434	217		
1990 081A	FENGYUN 1-2	20788	PRC	3 SEP	102.7	98.9	897	875		
1990 081D - 081CH			PRC	3 SEP	SEE NOTE		52*			52*
1990 083A	COSMOS 2100	20804	USSR	14 SEP	104.8	82.9	1011	956		
1990 083B		20805	USSR	14 SEP	104.7	82.9	1004	952		
1990 084A	MOLNIYA 3-39	20813	USSR	20 SEP	717.9	63.0	39156	1203		
1990 084D		20816	USSR	20 SEP	731.8	62.9	39962	1083		
1990 086A	METEOR 2-20	20826	USSR	28 SEP	104.0	82.5	958	938		
1990 086B		20827	USSR	28 SEP	104.0	82.5	957	939		
1990 088A		20830	US	1 OCT	718.0	55.0	20365	20000		
1990 090B	ULYSSES	20842	US	6 OCT	HELIOCENTRIC ORBIT					
1990 090C		20843	US	6 OCT	554.6	28.1	31628	336		
1990 090D		20844	US	6 OCT	HELIOCENTRIC ORBIT					
1990 090E		20845	US	6 OCT	HELIOCENTRIC ORBIT					
1990 091A	SBS-6	20872	US	12 OCT	1436.0	0.0	35796	35777		
1990 091B	GALAXY VI	20873	US	12 OCT	1436.1	0.0	35797	35778		
1990 091C		20874	ESA	12 OCT	609.0	8.0	34587	257		
1990 093A	INMARSAT 2 F1	20918	UK	30 OCT	1436.2	2.0	35867	35708		
1990 093B		20919	US	30 OCT	98.5	24.8	1003	368		
1990 094A	GORIZONT 21	20923	USSR	3 NOV	1436.1	0.2	35797	35774		
1990 094D		20926	USSR	3 NOV	1427.7	0.2	35781	35462		
1990 094E		20927	USSR	3 NOV	302.9	46.7	16952	172		
1990 095A		20929	US	13 NOV	ELEMENTS NOT AVAILABLE					
1990 095C		20931	US	13 NOV	ELEMENTS NOT AVAILABLE					
1990 095D		20932	US	13 NOV	ELEMENTS NOT AVAILABLE					
1990 097B		20963	US	15 NOV	ELEMENTS NOT AVAILABLE					
1990 097C		20964	US	15 NOV	ELEMENTS NOT AVAILABLE					
1990 097D		20965	US	15 NOV	ELEMENTS NOT AVAILABLE					
1990 099A	COSMOS 2105	20941	USSR	20 NOV	717.4	64.8	39371	964		
1990 099D		20944	USSR	20 NOV	707.4	64.8	38812	1029		
1990 100A	SATCOM I	20945	US	20 NOV	1436.2	0.0	35816	35760		
1990 100B	GSTAR IV	20946	US	20 NOV	1436.0	0.0	35791	35782		
1990 100C		20947	ESA	20 NOV	615.6	7.8	34905	279		
1990 101A	MOLNIYA 1-79	20949	USSR	23 NOV	717.5	64.0	39777	565		
1990 101D		20952	USSR	23 NOV	730.5	64.0	40408	573		
1990 102A	GORIZONT 22	20953	USSR	23 NOV	1436.1	0.3	35802	35770		
1990 102D		21046	USSR	23 NOV	1471.4	0.3	36566	36381		
1990 103A		20959	US	26 NOV	718.0	54.9	20334	20028		
1990 103B		20960	US	26 NOV	96.2	21.4	669	488		
1990 103C		20961	US	26 NOV	145.4	34.5	5404	158		
1990 104A	COSMOS 2106	20966	USSR	28 NOV	94.3	82.5	494	477		
1990 104B - 104W			USSR	28 NOV	SEE NOTE		55*			55*
1990 105A		20978	US	1 DEC	100.5	98.8	840	725		
1990 105B - 105AD			US	1 DEC	SEE NOTE		53*			53*
1990 108A	COSMOS 2107	20985	USSR	4 DEC	89.2	65.0	288	186		
1990 110A	COSMOS 2109	21006	USSR	8 DEC	675.7	64.8	19285	18973		
1990 110B	COSMOS 2110	21007	USSR	8 DEC	675.7	64.9	19226	19032		
1990 110C	COSMOS 2111	21008	USSR	8 DEC	675.7	64.8	19157	19102		
1990 110F		21011	USSR	8 DEC	675.2	64.8	19133	19099		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1990 LAUNCHES (CONT.)										
1990 110G		21012	USSR	8 DEC	340.1	65.2	18959	562		
1990 110H		21013	USSR	8 DEC	340.1	65.2	18960	562		
1990 111A	COSMOS 2112	21014	USSR	10 DEC	100.6	74.0	807	766		
1990 111B		21015	USSR	10 DEC	100.5	74.0	797	766		
1990 112A	RADUGA 26	21016	USSR	20 DEC	1436.0	0.4	35793	35777		
1990 112D		21019	USSR	20 DEC	1439.7	0.4	35979	35735		
1990 112F		21025	USSR	20 DEC	466.6	46.6	26888	210		
1990 114A	COSMOS 2114	21028	USSR	22 DEC	114.0	82.6	1412	1407		
1990 114B	COSMOS 2115	21029	USSR	22 DEC	113.9	82.6	1408	1404		
1990 114C	COSMOS 2116	21030	USSR	22 DEC	113.9	82.6	1408	1398		
1990 114D	COSMOS 2117	21031	USSR	22 DEC	113.8	82.6	1408	1393		
1990 114E	COSMOS 2118	21032	USSR	22 DEC	113.8	82.6	1408	1388		
1990 114F	COSMOS 2119	21033	USSR	22 DEC	113.7	82.6	1408	1382		
1990 114G		21034	USSR	22 DEC	114.6	82.6	1469	1408		
1990 116A	RADUGA 1-2	21038	USSR	27 DEC	1436.1	0.4	35793	35778		
1990 116D		21041	USSR	27 DEC	1470.2	0.4	36595	36309		
1990 116F		21045	USSR	27 DEC	346.7	46.6	19765	174		
1991 LAUNCHES										
1991 001A	NATO IVA	21047	NATO	8 JAN	1436.2	3.5	35791	35784		
1991 001B		21048	NATO	8 JAN	121.7	18.5	2722	786		
1991 001C		21049	NATO	8 JAN	635.9	25.1	35483	752		
1991 003A	ITALSAT-1	21055	ITALY	15 JAN	1436.1	0.1	35797	35774		
1991 003B	EUTELSAT	21056	ESA	15 JAN	1436.1	0.0	35833	35738		
1991 003C		21057	ESA	15 JAN	597.9	6.8	33996	267		
1991 003D		21058	ESA	15 JAN	504.1	7.0	28953	256		
1991 005A	COSMOS 2122	21065	USSR	18 JAN	92.7	65.0	415	402		
1991 006A	INFORMTR-1	21087	USSR	29 JAN	104.7	82.9	1006	954		
1991 006B		21088	USSR	29 JAN	104.6	83.0	993	956		
1991 007A	COSMOS 2123	21089	USSR	5 FEB	104.7	82.9	1003	961		
1991 007B		21090	USSR	5 FEB	104.6	82.9	992	962		
1991 007C		21091	USSR	5 FEB	104.6	82.9	995	955		
1991 009A	COSMOS 2125	21100	USSR	12 FEB	115.2	74.0	1471	1455		
1991 009B	COSMOS 2126	21101	USSR	12 FEB	115.5	74.0	1494	1464		
1991 009C	COSMOS 2127	21102	USSR	12 FEB	115.3	74.0	1475	1465		
1991 009D	COSMOS 2128	21103	USSR	12 FEB	115.0	74.0	1467	1443		
1991 009E	COSMOS 2129	21104	USSR	12 FEB	114.8	74.0	1467	1427		
1991 009F	COSMOS 2130	21105	USSR	12 FEB	114.5	74.0	1467	1398		
1991 009G	COSMOS 2131	21106	USSR	12 FEB	114.4	74.0	1466	1385		
1991 009H	COSMOS 2132	21107	USSR	12 FEB	114.7	74.0	1467	1413		
1991 009J - 009CA			USSR	12 FEB	SEE NOTE		54*			54*
1991 010A	COSMOS 2133	21111	USSR	14 FEB	1436.2	1.4	35794	35783		
1991 010D		21114	USSR	14 FEB	419.8	46.7	24265	123		
1991 010F		21129	USSR	14 FEB	1438.5	1.4	35909	35756		
1991 012A	MOLNIYA 1-80	21118	USSR	15 FEB	717.7	63.0	39473	878		
1991 012D		21121	USSR	15 FEB	700.5	62.9	38639	861		
1991 012E		21122	USSR	15 FEB	590.1	46.6	33618	234		
1991 013A	COSMOS 2135	21130	USSR	26 FEB	104.5	82.8	1016	921		
1991 013B		21131	USSR	26 FEB	104.4	82.8	1009	918		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1991 LAUNCHES (CONT.)										
1991 014A	RADUGA 27	21132	USSR	28 FEB	1436.1	0.6	35792	35779		
1991 014D		21135	USSR	28 FEB	1392.2	0.7	35029	34817		
1991 015A	ASTRA 1-B	21139	LUXEM	2 MAR	1436.1	0.0	35817	35755		
1991 015B	MOP-2	21140	ESA	2 MAR	1436.1	0.6	35795	35776		
1991 015C		21141	ESA	2 MAR	573.6	6.4	32728	250		
1991 015D		21142	ESA	2 MAR	421.3	6.6	24267	209		
1991 015E		21904	ESA	2 MAR	1437.9	0.7	36476	35166		
1991 017A		21147	US	8 MAR	ELEMENTS NOT AVAILABLE					
1991 017B		21148	US	8 MAR	ELEMENTS NOT AVAILABLE					
1991 018A	INMARSAT-2	21149	UK	8 MAR	1436.1	2.4	35792	35782		
1991 018B		21150	US	8 MAR	99.9	24.9	1094	411		
1991 018C		21151	US	8 MAR	589.6	22.9	33646	181		
1991 019A	NADEZHDA	21152	USSR	12 MAR	104.8	82.9	1014	954		
1991 019B		21153	USSR	12 MAR	104.7	82.9	1005	953		
1991 021A	COSMOS 2137	21190	USSR	19 MAR	93.0	65.8	435	411		
1991 021B		21191	USSR	19 MAR	91.4	65.8	351	338		
1991 022A	MOLNIYA 3-40	21196	USSR	22 MAR	717.7	63.0	39466	884		
1991 022D		21199	USSR	22 MAR	700.1	63.0	38563	917		
1991 024A	ALMAZ-1	21213	USSR	30 MAR	91.4	72.7	350	336		
1991 025A	COSMOS 2139	21216	USSR	4 APR	675.7	65.0	19148	19110		
1991 025B	COSMOS 2140	21217	USSR	4 APR	675.7	65.0	19156	19102		
1991 025C	COSMOS 2141	21218	USSR	4 APR	675.7	64.9	19152	19106		
1991 025E		21221	USSR	4 APR	675.5	64.9	19189	19058		
1991 025F		21220	USSR	4 APR	339.5	64.9	19072	409		
1991 025G		21226	USSR	4 APR	339.4	64.8	19096	383		
1991 026A	ANIK E-2	21222	CANADA	5 APR	1436.0	0.0	35794	35778		
1991 026B		21223	ESA	5 APR	635.4	3.5	35760	446		
1991 027B	GRO	21225	US	5 APR	92.7	28.5	412	404		
1991 028A	ASC 2 SPACENET 5	21227	US	13 APR	1436.0	0.0	35788	35784		
1991 028B		21228	US	13 APR	115.5	24.0	2399	560		
1991 028C		21229	US	13 APR	655.6	22.3	35895	1344		
1991 029A	COSMOS 2142	21230	USSR	16 APR	104.9	82.9	1017	958		
1991 029B		21231	USSR	16 APR	104.7	83.0	1007	952		
1991 030A	METEOR 3-4	21232	USSR	24 APR	109.3	82.6	1208	1179		
1991 030B		21233	USSR	24 APR	109.3	82.5	1210	1183		
1991 030C		21234	USSR	24 APR	109.3	82.5	1210	1183		
1991 031C		21262	US	28 APR	ELEMENTS NOT AVAILABLE					
1991 032A	NOAA-12	21263	US	14 MAY	101.2	98.7	825	805		
1991 032B		21267	US	14 MAY	100.7	98.7	798	789		
1991 032C		21298	US	14 MAY	100.7	98.7	798	789		
1991 033A	COSMOS 2143	21299	USSR	16 MAY	113.9	82.6	1414	1396		
1991 033B	COSMOS 2144	21300	USSR	16 MAY	114.0	82.6	1414	1409		
1991 033C	COSMOS 2145	21301	USSR	16 MAY	114.0	82.6	1414	1402		
1991 033D	COSMOS 2146	21302	USSR	16 MAY	113.8	82.6	1414	1391		
1991 033E	COSMOS 2147	21303	USSR	16 MAY	113.8	82.6	1414	1386		
1991 033F	COSMOS 2148	21304	USSR	16 MAY	113.7	82.6	1414	1379		
1991 033G		21305	USSR	16 MAY	114.7	82.6	1470	1413		
1991 035C		21479	USSR	21 MAY	85.8	82.2	90	65		
1991 037A	AURORA-II	21392	US	29 MAY	1436.2	0.0	35801	35773		
1991 037B		21393	US	29 MAY	112.8	25.0	2307	403		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1991 LAUNCHES (CONT.)										
1991 037C		21394	US	29 MAY	648.8	24.3	35432	1460		
1991 039A	OKEAN 3	21397	USSR	4 JUN	97.5	82.5	658	624		
1991 039B		21398	USSR	4 JUN	97.6	82.5	660	626		
1991 039C		21842	USSR	4 JUN	97.4	82.5	649	617		
1991 041A	COSMOS 2150	21418	USSR	11 JUN	100.7	74.0	804	780		
1991 041B		21419	USSR	11 JUN	100.6	74.0	799	775		
1991 041C		21420	USSR	11 JUN	100.9	74.1	805	794		
1991 041D		21711	USSR	11 JUN	100.6	74.0	800	776		
1991 042A	COSMOS 2151	21422	USSR	13 JUN	97.6	82.5	657	627		
1991 042B		21423	USSR	13 JUN	97.6	82.5	658	628		
1991 043A	MOLNIYA 1-81	21426	USSR	18 JUN	717.7	63.1	39730	619		
1991 043D		21429	USSR	18 JUN	732.2	63.1	40451	612		
1991 045A	REX	21527	US	29 JUN	101.3	89.6	871	766		
1991 045B		21528	US	29 JUN	101.1	89.6	858	764		
1991 045C		21529	US	29 JUN	101.3	89.6	872	765		
1991 045D		21532	US	29 JUN	101.2	89.6	874	758		
1991 045E		21691	US	29 JUN	100.4	89.9	793	765		
1991 045F		21712	US	29 JUN	101.9	89.3	960	738		
1991 046A	GORIZONT 23	21533	USSR	2 JUL	1436.0	0.9	35842	35728		
1991 046D		21536	USSR	2 JUL	1426.8	0.9	35708	35501		
1991 046E		21538	USSR	2 JUL	570.2	46.6	32654	142		
1991 047A		21552	US	4 JUL	718.0	55.3	20294	20072		
1991 047D		21555	US	4 JUL	311.1	34.6	17468	192		
1991 050A	ERS-1	21574	ESA	17 JUL	100.3	98.5	775	774		
1991 050B	UOSAT-F	21575	UK	17 JUL	100.2	98.5	772	761		
1991 050C	ORBCOMM-X	21576	US	17 JUL	100.2	98.5	771	766		
1991 050D	TUBSAT	21577	FRG	17 JUL	100.2	98.5	772	763		
1991 050E	SARA	21578	FRANCE	17 JUL	100.1	98.5	767	760		
1991 050F		21610	ESA	17 JUL	100.3	98.4	778	771		
1991 053A	MOLNIYA 1-82	21630	USSR	1 AUG	717.6	63.4	39803	541		
1991 053D		21633	USSR	1 AUG	733.2	63.4	40578	533		
1991 054A	STS-43	21638	US	2 AUG	90.5	28.4	324	298		
1991 054B	TDRS-5	21639	US	2 AUG	1436.2	0.0	35805	35770		
1991 054C		21640	US	2 AUG	627.6	26.8	35507	298		
1991 054D		21641	US	2 AUG	1435.7	1.3	35923	35635		
1991 054E		21642	US	2 AUG	618.8	27.0	35079	271		
1991 055A	INTELSAT 6 F-5	21653	ITSO	14 AUG	1436.2	0.0	35793	35782		
1991 055B		21654	ESA	14 AUG	624.6	7.4	35422	231		
1991 056A	METEOR 3-5	21655	USSR	15 AUG	109.3	82.6	1205	1183		
1991 056B		21656	USSR	15 AUG	109.3	82.6	1204	1182		
1991 059A	COSMOS 2154	21666	USSR	22 AUG	104.8	82.9	1006	967		
1991 059B		21667	USSR	22 AUG	104.7	82.9	1001	961		
1991 060A	BS-3B	21668	JAPAN	25 AUG	1436.2	0.0	35802	35774		
1991 060C		21670	JAPAN	25 AUG	638.8	28.6	36225	156		
1991 061A		I21688	INDIA	29 AUG	103.1	99.1	918	889		
1991 061B		I21689	INDIA	29 AUG	102.8	99.2	915	863		
1991 062A	SOLAR-A	21694	JAPAN	30 AUG	97.6	31.3	770	521		
1991 062B		21695	JAPAN	30 AUG	97.6	31.3	772	517		
1991 062C		21696	JAPAN	30 AUG	96.1	31.3	651	492		
1991 062D		21697	JAPAN	30 AUG	96.2	31.3	659	491		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1991 LAUNCHES (CONT.)										
1991 062E		21698	JAPAN	30 AUG	96.1	31.3	654	488		
1991 062F		21699	JAPAN	30 AUG	96.3	31.4	668	494		
1991 062H		21802	JAPAN	30 AUG	97.7	31.5	734	562		
1991 063B	UARS	21701	US	12 SEP	96.2	57.0	580	575		
1991 064A	COSMOS 2155	21702	USSR	13 SEP	1436.1	0.8	35802	35771		
1991 064B		21703	USSR	13 SEP	1441.7	0.9	35902	35889		
1991 064E		21739	USSR	13 SEP	516.0	47.0	29465	397		
1991 064F		21740	USSR	13 SEP	598.1	46.9	34145	126		
1991 065A	MOLNIYA 3-41	21706	USSR	17 SEP	717.7	62.9	39594	757		
1991 065J		21709	USSR	17 SEP	733.3	62.9	40354	761		
1991 067A	ANIK E1	21726	CANADA	26 SEP	1436.2	0.0	35797	35777		
1991 067B		21727	ESA	26 SEP	638.5	4.0	35973	393		
1991 068A	COSMOS 2157	21728	USSR	28 SEP	114.0	82.6	1412	1403		
1991 068B	COSMOS 2158	21729	USSR	28 SEP	113.9	82.6	1408	1401		
1991 068C	COSMOS 2159	21730	USSR	28 SEP	113.7	82.6	1406	1387		
1991 068D	COSMOS 2160	21731	USSR	28 SEP	113.8	82.6	1408	1396		
1991 068E	COSMOS 2161	21732	USSR	28 SEP	113.8	82.6	1407	1392		
1991 068F	COSMOS 2162	21733	USSR	28 SEP	114.0	82.6	1418	1404		
1991 068G		21734	USSR	28 SEP	114.7	82.6	1478	1406		
1991 072A	COSMOS 2164	21743	USSR	10 OCT	92.9	74.0	564	265		
1991 074A	GORIZONT 24	21759	USSR	23 OCT	1436.2	1.1	35801	35773		
1991 074D		21762	USSR	23 OCT	1444.3	1.1	35972	35920		
1991 074E		21763	USSR	23 OCT	625.0	46.7	35504	169		
1991 074F		21764	USSR	23 OCT	577.4	46.9	33052	131		
1991 075A	INTELSAT F1 V1	21765	ESA	29 OCT	1436.2	0.0	35799	35778		
1991 075B		21766	ESA	29 OCT	628.1	6.9	35576	254		
1991 076A	USA 72	21775	US	8 NOV	ELEMENTS NOT AVAILABLE					
1991 076B		21776	US	8 NOV	ELEMENTS NOT AVAILABLE					
1991 076C		21799	US	8 NOV	ELEMENTS NOT AVAILABLE					
1991 076D	USA 76	21808	US	8 NOV	ELEMENTS NOT AVAILABLE					
1991 076E	USA 77	21809	US	8 NOV	ELEMENTS NOT AVAILABLE					
1991 077A	COSMOS 2165	21779	USSR	12 NOV	113.8	82.6	1411	1391		
1991 077B	COSMOS 2166	21780	USSR	12 NOV	113.9	82.6	1411	1403		
1991 077C	COSMOS 2167	21781	USSR	12 NOV	113.9	82.6	1411	1396		
1991 077D	COSMOS 2168	21782	USSR	12 NOV	113.8	82.6	1411	1386		
1991 077E	COSMOS 2169	21783	USSR	12 NOV	113.7	82.6	1411	1379		
1991 077F	COSMOS 2170	21784	USSR	12 NOV	114.0	82.6	1411	1410		
1991 077G		21785	USSR	12 NOV	114.7	82.6	1470	1411		
1991 079A	COSMOS 2172	21789	USSR	22 NOV	1436.2	1.1	35805	35770		
1991 079D		21792	USSR	22 NOV	1460.2	1.1	36281	36233		
1991 079E		21793	USSR	22 NOV	629.4	46.8	35734	164		
1991 079F		21794	USSR	22 NOV	639.9	46.6	36224	216		
1991 080B	USA 75	21805	US	25 NOV	ELEMENTS NOT AVAILABLE					
1991 080C		21806	US	25 NOV	ELEMENTS NOT AVAILABLE					
1991 080D		21807	US	25 NOV	ELEMENTS NOT AVAILABLE					
1991 081A	COSMOS 2173	21796	USSR	26 NOV	104.7	83.0	1015	943		
1991 081B		21797	USSR	26 NOV	104.6	83.0	1004	944		
1991 082A	USA 73	21798	US	28 NOV	101.8	98.9	853	836		
1991 082B		21800	US	28 NOV	101.6	98.9	836	832		
1991 082C		21801	US	28 NOV	101.7	98.9	840	833		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1991 LAUNCHES (CONT.)										
1991 082D		21825	US	28 NOV	101.7	98.9	846	829		
1991 082E		21836	US	28 NOV	101.7	98.9	845	831		
1991 083A	EUTELSAT II	21803	ESA	7 DEC	1436.1	0.0	35850	35722		
1991 083B		21804	ESA	7 DEC	753.6	16.4	41312	796		
1991 084A	TELECOM 2A	21813	FRANCE	16 DEC	1436.3	0.6	35848	35732		
1991 084B	INMARSAT 2 F-3	21814	ITSO	16 DEC	1436.1	2.5	35798	35775		
1991 084C		21815	ESA	16 DEC	644.6	3.5	36276	402		
1991 084D		21818	ESA	16 DEC	629.8	3.6	35574	346		
1991 086A	INTERCOSMOS 25	21819	USSR	18 DEC	121.5	82.6	3061	436		
1991 086B		21820	USSR	18 DEC	121.5	82.6	3063	435		
1991 086C		21826	USSR	18 DEC	120.9	82.6	3009	436		
1991 086D		21827	USSR	18 DEC	121.1	82.5	3018	439		
1991 086E	MAGION 3	21835	CZECH	18 DEC	121.5	82.6	3060	436		
1991 086F		21905	USSR	18 DEC	121.7	82.6	3073	442		
1991 087A	KADUGA 28	21821	USSR	19 DEC	1436.3	1.2	35811	35769		
1991 087D		21824	USSR	19 DEC	1469.1	1.3	36510	36349		
1991 087E		21828	USSR	19 DEC	642.1	46.9	36350	203		
1991 087F		21829	USSR	19 DEC	645.9	46.8	36494	254		
1991 088A	PRC 34	21833	PRC	28 DEC	601.0	31.3	34257	166		
1991 088B		21834	PRC	28 DEC	108.7	31.0	2115	217		
1992 LAUNCHES										
1992 003A	COSMOS 2176	21847	USSR	24 JAN	718.1	63.0	39692	678		
1992 003D		21850	USSR	24 JAN	706.1	63.0	39104	673		
1992 005A	COSMOS 2177	21853	USSR	29 JAN	675.7	64.8	19147	19110		
1992 005B	COSMOS 2178	21854	USSR	29 JAN	675.7	64.8	19171	19087		
1992 005C	COSMOS 2179	21855	USSR	29 JAN	675.7	64.8	19149	19109		
1992 005F		21858	USSR	29 JAN	675.4	64.8	19133	19107		
1992 005G		21862	USSR	29 JAN	340.3	64.8	19118	416		
1992 005H		21863	USSR	29 JAN	340.3	64.9	19112	422		
1992 006A	USA 78	21873	US	10 FEB	ELEMENTS NOT AVAILABLE					
1992 006B		21874	US	10 FEB	ELEMENTS NOT AVAILABLE					
1992 006C		21877	US	10 FEB	ELEMENTS NOT AVAILABLE					
1992 007A	JERS-1	21867	JAPAN	11 FEB	96.0	97.7	569	567		
1992 007B		21868	JAPAN	11 FEB	94.4	97.7	541	435		
1992 008A	COSMOS 2180	21875	USSR	17 FEB	104.8	82.9	1012	958		
1992 008B		21876	USSR	17 FEB	104.7	82.9	1006	956		
1992 009A	USA 79	21890	US	23 FEB	717.9	54.7	20344	20017		
1992 009B		21891	US	23 FEB	98.3	20.0	724	633		
1992 009C		21892	US	23 FEB	349.5	34.6	19924	189		
1992 010A	SUPERBIRD B1	21893	JAPAN	26 FEB	1436.1	0.1	35806	35768		
1992 010B	ARABSAT 1C	21894	SA	26 FEB	1436.1	0.1	35799	35775		
1992 010C		21895	ESA	26 FEB	613.1	6.9	34806	247		
1992 011A	MOLNIYA 1-83	21897	USSR	4 MAR	717.6	62.8	39712	635		
1992 011D		21900	USSR	4 MAR	698.4	62.8	38767	627		
1992 012A	COSMOS 2181	21902	USSR	9 MAR	104.9	82.9	1010	970		
1992 012B		21903	USSR	9 MAR	104.8	82.9	1006	959		
1992 013A	GALAXY 5	21906	US	14 MAR	1436.1	0.1	35881	35694		
1992 013B		21907	US	14 MAR	638.5	19.7	35259	1109		

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREQ.(MHZ)	NOTES
1992 LAUNCHES (CONT.)										
1992 014A	SOYUZ TM-14	21908	USSR	17 MAR	92.4	51.6	400	379		
1992 015A	STS 45	21915	US	24 MAR	90.3	57.0	292	284		

INITIAL ELEMENTS OF OBJECTS WHICH WERE LAUNCHED/CATALOGED AND DECAYED WITHIN THE REPORTING PERIOD

INTERNATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLINATION	APOGEE KM.	PERIGEE KM.	NOTES
1986 017FV		21883	USSR	19 FEB	91.7	51.6	366	348	
1990 038L		21865	USSR	25 APR	91.7	51.6	366	348	
1990 038M		21866	USSR	25 APR	89.8	74.0	279	247	
1990 038N		21869	USSR	25 APR	89.8	74.0	268	259	
1990 038P		21870	USSR	25 APR	89.5	74.0	258	238	
1990 038Q		21871	USSR	25 APR	89.3	74.0	246	237	
1990 038R		21872	USSR	25 APR	89.5	74.0	256	239	
1991 078C		21843	USSR	20 NOV	INITIAL ELEMENTS NOT AVAILABLE				
1992 001B		21845	USSR	21 JAN	INITIAL ELEMENTS NOT AVAILABLE				
1992 002A	STS-42	21846	US	22 JAN	90.4	59.9	298	292	
1992 004B		21852	USSR	25 JAN	INITIAL ELEMENTS NOT AVAILABLE				
1992 005D		21856	USSR	29 JAN	INITIAL ELEMENTS NOT AVAILABLE				
1992 005E		21857	USSR	29 JAN	INITIAL ELEMENTS NOT AVAILABLE				
1992 011B		21898	USSR	4 MAR	91.3	62.8	468	211	
1992 011C		21899	USSR	4 MAR	90.9	62.8	464	173	
1992 014B		21909	USSR	17 MAR	87.7	51.6	168	152	